UGANDA PROTECTORATE.

ANNUAL REPORT

OF THE

IMPERIAL BUREAU
23 SEPT. 1927
OF MYCOLOGY

DEPARTMENT OF AGRICULTURE

FOR THE

YEAR ENDED 31ST DECEMBER, 1926.

PRICE: Shs. 4.

Published by Command of His Excellency the Governor.

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1927.

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STAFF LIST.

Director of Agriculture	... ...	S. Simpson, C.M.G., B.Sc. (Edin.), M.R.A.S.E., N.D.A.
Deputy Director of Agriculture	...	L. Hewett, M.R.A.C.
Statistician and Secretary, Cotton Board		A. S. Widgery.
Office Superintendent	... ...	G. A. Read.
Clerk	... ...	W. H. B. Etheridge.

GENERAL DIVISION.

Senior Agricultural Officers :

A. R. Morgan. R. G. Harper.

Superintendent Agricultural Education :

E. G. Staples, M.A., M.R.A.C., Dip. Agric. (Cantab.).

Agricultural Officers :

J. D. Snowden. R. T. Wickham. C. E. J. Biggs, B.Sc. (Lond.), Dip. Agric. (Wye).

D. Stedman-Davies, B.Sc. (Wales). G. F. Clay, M.C., B.Sc. (Edin.), N.D.A., N.D.D. (Hons.), [redacted].

A. B. Killick, B.Sc. (Lond.), Dip. Agric. (Wye). N. S. Haig, B.Sc. (Lond.), Dip. Agric. (Wye).

Coffee Officer	... ...	W. L. Munn.
Cotton Grader and Ginning Inspector	... ...	Major N. G. Wright.

Plantation Managers :

G. T. Philpott.	F. W. Hall.	Capt. J. S. Harmsworth, M.C.
C. Hazel.	P. Chandler.	E. A. Ruck.

Ploughing Instructors :

E. M. Baird.	H. Allen.	A. L. Stephens.

SCIENTIFIC DIVISION.

Entomologist	... ...	H. Hargreaves, A.R.C.S., D.I.C., F.E.S.
Assistant Entomologist	... ...	G. L. R. Hancock, M.A. (Cantab.), F.E.S.
Mycologist	... ...	C. G. Hansford, M.A. (Cantab.).
Botanist	... ...	T. D. Maitland, M.B.E.
Cotton Botanist	... ...	G. W. Nye, B.Sc. (Lond.), Dip. Agric. (Wye).
Agricultural Chemist	... ...	W. S. Martin, Ph.D., M.Sc. (Lond.), A.R.C.S., D.I.C., A.I.C.

CLERICAL STAFF.

J. C. De Souza. A. S. Remedios. M. A. S. Menezes.

DEPARTMENT OF AGRICULTURE.

ANNUAL REPORT, 1926.

Addresses of Officers and Telephone Nos.

		P.O. Box No.	*Telephone No.*
Director of Agriculture	Kampala ...	281	189
Head Office	Kampala ...	281	15
Mycological Office and Laboratory ...	Kampala ...	5	26
Entomological Office and Laboratory ..	Kampala ...	5	25
Botanical Gardens and Meteorological Office	Entebbe ...	60	38
Jinja Office	Jinja ...	67	22

Principal Experimental Stations.

(1) Kampala. (2) Serere, Teso. (3) Bukalasa, Mengo.

Subsidiary Experimental Stations.

(1) Ngetta, Lango. (2) Simsa, Teso.
(3) Fort Portal, Toro. (4) Kakumiro, Mubende.
(5) Busoba, Bugishu. (6) Buwunga, Masaka.

CONTENTS.

	Page.
Staff List	3
Report of the Director of Agriculture	5—15
Report of the Superintendent of Agricultural Education	15—16
Agricultural Education in Normal Schools	17
Report of the Senior Agricultural Officer	18—19
Report on the Serere Experimental Station	19—22
Report on the Ngetta Experimental Station, Lango	22
Report of the Cotton Botanist	23—24
Report of the Entomologist	24—27
Report of the Assistant Entomologist	27—29
Report of the Acting Mycologist	30—32

APPENDICES.

(1) Statistics of Native Agriculture—Crops under Cultivation	33
(2) do do —Live Stock	34
(3) Statistics of European Agriculture—Crops under Cultivation	35
(4) Statistics of Indian Agriculture—Crops under Cultivation	36
(5) Statistics of Live-Stock on European and Indian Plantations	37
(6) Comparative Statement of Exports, 1926	37
(7) do do for five years	38
(8) Statistics of Ginning Machinery, 1926	38
(9) Meteorological Statistics	39—49

ANNUAL REPORT

OF

THE DEPARTMENT OF AGRICULTURE,

UGANDA PROTECTORATE,

for the Year ended 31st December, 1926.

Staff.

The following Staff appointments and movements took place during the year:—

The Director of Agriculture went on leave on January 11th and returned on August 9th.

Mr. L. Hewett, Deputy Director, acted as Director from January 24th until the Director's return to Kampala from leave on August 31st.

Mr. A. R. Morgan, Senior Agricultural Officer, acted as Director from January 6th to January 24th and as Deputy Director from the latter date until August 31st.

Mr. R. G. Harper, Senior Agricultural Officer, was on leave from March 17th to October 17th.

Mr. E. G. Staples, Superintendent of Agricultural Education, returned from leave on January 8th.

Mr. J. D. Snowden, Agricultural Officer, acted as Mycologist until October 12th

Mr. R. T. Wickham, Agricultural Officer, returned from leave on March 6th.

Messrs. N. S. Haig and C. E. J. Biggs, Agricultural Officers, went on leave on October 31st.

Mr. B. I. Slaughter, Agricultural Officer, was transferred to the Administration on April 14th.

Mr. J. C. F. Hopkins, Agricultural Officer, left the country on October 9th on appointment as Mycologist in Southern Rhodesia.

Mr. W. L. Munn arrived on September 30th on appointment as Coffee Officer in succession to Mr. L. P. Ross, who had resigned.

Mr. O. E. Lord, Ginning Inspector, went on leave on August 14th on the termination of his agreement and his place was filled by Major N. G. Wright, who arrived on appointment as Cotton Grader and Ginning Inspector on December 26th.

Mr. G. T. Philpott, Plantation Manager, returned from leave on December 26th

Messrs. E. B. Stevenson and H. Allen, Ploughing Instructors, went on leave on March 31st and December 26th respectively on resignation.

Mr. T. D. Maitland, Botanist, went on leave on October 31st on appointment as Superintendent, Victoria Gardens, British Cameroons.

Mr. C. G. Hansford arrived from Jamaica on appointment as Mycologist on September 30th.

Messrs. G. W. Nye, Cotton Botanist, and W. S. Martin, Agricultural Chemist, went on leave on October 3rd and November 28th, respectively.

Mr. S. Grey, Clerk, left the department on April 1st on appointment as Assistant Accountant in the Public Works Department, and on June 26th Mr. W. H. B. Etheridge arrived to take his place.

General.

2. The year must be recorded as a wet one, and the rainfall from September to the end of November was unusually heavy in all areas. This affected adversely the yields of most crops—especially cotton.

The meteorological figures for the year are given in Appendix No. 9.

Exports.

3. The value of domestic produce exported amounted to £3,597,437, a decrease of £1,499,280 compared with the previous year, which can be mainly attributed to the fall in cotton prices.

The following table gives details of exports during the year.

Comparative tables will be found in Appendices 6 and 7.

Description.	*Quantity.*	*Value.* £	*Per cent.*
Cotton, raw	723,438 centals ...	3,051,791 ...	84·83
Cotton seed	35,360 tons ...	194,887 ...	5·42
Coffee, raw	33,211 cwts ...	147,884 ...	4·11
Rubber	13,561 centals ...	135,619 ...	3·77
Hides (dry and dry salted)	7,640 cwts ...	27,357 ...	0·76
Ivory	202 cwts ...	18,289 ...	0·51
Groundnuts	380 tons ...	6,026 ...	0·17
Skins, sheep and goats ...	88,750 skins ...	5,173 ...	0·14
Simsim	194 tons ...	4,130 ...	0·12
Chillies	1,245 cwts ...	1,715 ...	0·05
Sugar, refined	1,255 cwts ...	1,599 ...	0·04
Other exports	... ...	2,967 ...	0·08
		£3,597,437	

Cotton.

4. (*a*) *1925-26 Crop.*—In the Eastern Province the marketing of the crop began on January 4th, 1926, but adverse weather conditions during the ripening period reduced the average yield very considerably. The season was short and by the end of February the bulk of the crop had been marketed. The total crop in this province was less by 13% than the previous season's output. In the Buganda Province buying started on February 15th and the total crop of seed cotton exceeded the previous year's figure by approximately 3,000 tons.

The exports of cotton lint from Mombasa during the year amounted to 180,857 bales of 400 lbs. each, which was 15,181 bales less than the previous year.

Excise duty collected on cotton at 6 cents (¾d.) per lb. of lint exported amounted to £199,897.

(*b*) *1926-27 Crop.*—The crop was planted under favourable conditions and included approximately 40,000 acres in the Eastern Province sown with N 17 seed. The crop made very satisfactory progress up to August, but thereafter the rainfall was excessive, in the Eastern Province especially, and the prospects of a good crop grew steadily worse. By the end of November it was clear that, in spite of a favourable period of dry weather in October, the yield would be well below the average.

In Buganda Province the climatic conditions were not so adverse and an average yield was indicated.

The report of the Senior Agricultural Officer, Mr. R. G. Harper, is given on pages 18—22 and deals with the Teso and Lango districts of the Eastern Province.

The table below gives the approximate figures of acreages planted in the various districts:—

	1926. *Acres.*	1925. *Acres.*
EASTERN PROVINCE:—		
Busoga District	88,503	87,333
Budama District	35,751	40,487
Bugwere District	53,187	53,743
Bugishu District	45,907	43,050
Teso District	99,329	97,500
Lango District	61,697	61,500
TOTAL ...	384,374	383,613

	1926.	1925.
	Acres.	*Acres.*
BUGANDA PROVINCE :—		
Mengo District	103,000	110,000
Entebbe District	25,000	27,500
Masaka District	20,000	30,000
Mubende District	25,000	30,000
TOTAL ...	173,000	197,500
NORTHERN PROVINCE :—		
Bunyoro District	13,900	10,000
Gulu District	9,930	9,500
Chua District	7,405	5,841
West Nile District	500	300
TOTAL ...	31,735	25,641
WESTERN PROVINCE :—		
Toro District	1,535	2,570
Ankole District	100	1,000
TOTAL ...	1,635	3,570
GRAND TOTAL ...	590,744	610,324

(*c*) *Transport.*—No delays occurred in moving the 1925/26 crop, which was handled expeditiously by the Kenya and Uganda Railway.

Towards the end of the year the new section of line in Busoga west of the River Mpologoma was open to traffic under constructional rates and that section of the line to Tororo from Kenya was almost through. The section between Tororo and Nsinze across the Mpologoma should be finished by the time this report is published.

The excellent net-work of roads in the cotton producing areas made internal transport easy, and as a result large numbers of light motor lorries were in service and their use is extending.

(*d*) *Cotton Seed.*—The prohibition on the export of cotton seed which was put into force in 1925 between January 1st and May 31st each year was relaxed to enable seed to be exported from April 1st. The total amount exported during the year amounted to 35,360 tons valued at £194,887, compared with 21,928 tons in 1925.

(*e*) *Cotton Ginneries.*—Tabulated details of all cotton ginneries are given in Appendix No. 8. During the year 176 cotton ginneries were licensed to gin and bale cotton compared with 155 during 1925. Two press houses were also licensed in the Mengo district.

	No. of licences issued.	
	1926	1925
Eastern Province	99	90
Buganda Province	65	55
Northern Province	10	8
Western Province	2	2
TOTAL	176	155

Although in 1925 the number of ginneries was far in excess of our requirements, 21 more were added during the year in spite of every effort being made to induce prospective ginners to refrain from building. Pioneer ginneries are a distinct advantage in areas where the industry is in an experimental stage or where transport facilities are of a primitive nature, but with an established industry and the introduction of modern methods of transport, pioneer ginneries are far too costly to maintain and operate. With the extension of railway facilities, the working costs of the larger and more centrally situated ginneries should rapidly decline, and the tendency must be for the number of ginneries to decrease in all areas provided with railway facilities. At present the costs of handling and ginning the crop are much too high throughout the whole country.

About 25 ginneries changed hands during the year at very high prices.

(*f*) *Cotton Control Board.*—Monthly meetings of the Board were held in this office during 1926.

(*g*) *Cotton Ordinance.*—The Cotton Ordinance, 1926, was passed in December and became operative at the end of the year.

This ordinance is of a very comprehensive character to secure and maintain the production of the highest quality of cotton and in general to regulate and control the cotton industry.

(*h*) *Cotton Tax.*—On the 15th January, 1919, a tax of four cents of a rupee per lb. was imposed on all cotton exported which was the produce of the 1918 cotton planting. The proceeds were paid into a fund called the Uganda Cotton Development Fund to be utilised for cotton development purposes in such manner as directed by the Governor.

The amount collected under this ordinance was £47,227.

The cotton tax was imposed for six main reasons:—

(*a*) To steady local cotton prices.

(*b*) To give other agricultural products such as coffee and rubber a better chance to become permanently established.

(*c*) To provide experimental stations for cotton research work.

(*d*) To provide permanent roads in cotton producing areas.

(*e*) To make funds available within the Protectorate for general development work.

(*f*) To keep labour rates from becoming abnormal.

On the 15th November, 1919, the tax was reduced to three cents of a rupee per lb. on all cotton lint produced subsequent to the 31st December, 1918.

The tax became ultimately three cents of a florin and automatically six cents of a shilling.

The tax remained at six cents until the end of 1926.

From the 1st January, 1920, the tax has been paid into general revenue.

During 1926 the tax was placed on a sliding scale to become operative in 1927 on the following basis:—

"The tax shall be calculated on the sliding scale below according to the closing price on the Liverpool Cotton Exchange on the 14th, 15th or 16th day of December of the previous year, whichever shall be the last day on which business is done in respect of June/American "Middling" futures:—

Price in pence per lb.	*Tax in cents per lb.*
6·00d. or below	None
From 6·01d. to 7d. inclusive	2 cents.
„ 7·01d. „ 8d. „	3 „
„ 8·01d. „ 9d. „	4 „
„ 9·01d. „ 10d. „	5 „
„ 10·01d. „ 13d. „	6 „
„ 13·01d. „ 14d. „	7 „
„ 14·01d. „ 15d. „	8 „
Above 15·00d.	9 „

The tax is two cents per lb. during 1927.

(*i*) *Direct Revenue from Cotton.*—The following are the details of the direct revenue received from the cotton industry since 1913:—

LICENCES:—

Year.	£	
1913—14	233	(Permits to Purchase Raw Cotton).
1914—15	353	(Licences and Permits to Purchase Raw Cotton).
1915—16	920	(Licences to Purchase Raw Cotton).
1916—17	1,690	do
1917—18	2,890	do
1918—19	5,795	do
1919—20	5,745	do
9 months to 31-12-20 ...	1,145	(Ginning Licences and Licences to Purchase Raw Cotton.)
1921	12,285	do do
1922	19,220	do do
1923	12,346	do do
1924	13,520	do do
1925	18,690	do do
1926	17,690	do do

COTTON TAX:—

Year.	£	Year.	£
1919	47,227*	1923	111,385
1920	56,958	1924	158,615
1921	89,258	1925	216,983
1922	64,034	1926	199,897

Profits on cotton purchased on Government account in 1921 and credited in 1923 amounted to £31,018.

Premia on ginnery sites in the Eastern Province—£6,000.

(*j*) *Destination of Uganda Cotton.*—About half our cotton crop is sent direct to Liverpool and the other half to Bombay and Japan. Bombay re-exports a quantity to Liverpool and also to Japan. The Japanese have been very keen purchasers of Uganda cotton for some years, and they have now bought six ginneries so that their share of the crop will increase particularly as ample direct shipping from Mombasa to Japan is now available.

(*k*) *Local Sales of Baled Cotton.*—A large quantity of roller-ginned baled cotton is sold locally and in order to place this rapidly expanding business upon a firmer basis, it was suggested that all local contracts should be subject to a compulsory arbitration clause. The local Cotton Association, however, objected to the introduction of such legislation and the matter was dropped. An arbitration clause is, however, becoming fairly general in all local contracts for baled cotton.

Coffee.

5. Returns received from European plantations show that approximately 12,587 acres are under cultivation with *Coffea arabica* and 1,933 acres with *Coffea robusta.* The acreage under the former is declining except in those parts of the Protectorate which are climatically suited to this type of coffee. The year's crop was disappointing, and abortion of coffee flower buds in many areas was a cause of loss. The report of the Entomologist deals fully with pests affecting coffee and will be found on pages 24—27. At an elevation of about 4,000 feet with a humid climate and a rich soil *C. robusta* thrives exceedingly well and gives a high yield per acre. The acreage under *robusta* is rapidly increasing, especially on plantations in Kyagwe, and good types are being grown.

Native Coffee Industry.

(*a*) The development of the native coffee industry is now confined almost entirely to the planting of improved strains of *C. robusta*, derived from the selections made by the Botanist, Mr. T. D. Maitland.

Central and subsidiary nurseries have been established in all districts in Buganda Province, including the Sese Islands, and from these, plants have been distributed to applicants in large numbers. Similar work has been done in the Toro district of the Western Province and on a smaller scale in Bunyoro in the Northern Province. During the year the supply of selected seed has, however, been insufficient to meet all demands, but the deficiency was to some extent made up by purchase of approved seed from both European and native growers.

It is interesting to record that during October the distribution of *Coffea robusta* plants from the Kampala plantation amounted to 12,000 to 120 natives in lots of 50 to 200 per man. In addition during the same month 8,000 were issued to European planters from this plantation.

The table below shews the total distribution of *C. robusta* seedlings during the year:—

BUGANDA PROVINCE:—		
Mengo District	71,786	
Entebbe District	95,254	
Masaka District	113,000	
Mubende District	97,925	
	———	377,965
WESTERN PROVINCE:—		
Toro District		28,100
NORTHERN PROVINCE:—		
Bunyoro District		6,800
TOTAL		412,865

*The amount collected in 1919 was credited to the "Uganda Cotton Development Fund" and expended on experimental stations for cotton research work, provision of roads in cotton producing areas, etc., etc. Thereafter the Cotton Tax was credited to "General Revenue."

Acreages have been calculated on the basis of 300 trees per acre, equivalent to an average planting distance of 12′ x 12′, after allowing a reasonable percentage for losses.

(*b*) In the Bugishu County of Mount Elgon the native grows *C. arabica* and this young industry continues to make good progress. During the year 127,386 plants were distributed and planted which makes the total acreage about 573, of which 241 are of bearing age. There was a very keen demand for plants and a much larger area could have been planted had more plants been available. The crop was harvested from September—December and was estimated at 60 tons of parchment coffee. Prices were good, varying from 30 to 45 cents per lb. Buyers are reported to be well pleased with the quality of Bugishu coffee.

80,280 lbs. of cherry coffee were pulped at the central pulping station at Buwallasi and 18,082 lbs. at Bubulu as compared with 25,890 lbs. and 6,865 lbs. respectively in 1925.

The exports of coffee for the year totalled 33,211 cwts. valued at £147,884, which is an increase over the previous year of 3,328 cwts. in quantity and £8,415 in value.

Rubber—*Hevea brasiliensis.*

6. Although prices were lower, production has increased greatly and exports for the year amounted to 1,356,100 lbs. valued at £135,619. This shews a considerable increase over the previous year, *viz.*, 550,300 lbs. in quantity and £66,915 in value. Returns from non-native plantations shew that some 12,752 acres are now under this crop which each year assumes a more important position in the economic development of the country.

No new disease of importance has been recorded, but details of those present will be found in the report of the Mycologist.

Other Crops.

7. (*a*) *Rice.*—A considerably increased acreage was planted in the Bugwere and Bugishu districts, and a slight increase is recorded in Budama district.

The estimated acreage in the three districts where rice is an important crop is as under:—

	1925. *Acres.*	1926. *Acres.*
Budama District	9,715	10,000
Bugwere District	400	2,000
Bugishu District	880	4,800
TOTAL	10,995	16,800

The crop was a good one, but the price was affected by the lower rates prevailing in Tanganyika. Rice is being increasingly used by the natives as food, and when prices are low many prefer to eat their rice rather than to sell it.

In Toro rice is also grown on a small scale and the crop is sold locally.

(*b*) *Groundnuts.*—Exports show an increase of 339 tons in quantity and £4,890 in value by comparison with the previous year. Although this crop is grown on a considerable scale cotton is the natives' main money crop and with the good prices realised for this, groundnuts are largely consumed locally. When cotton prices are low, groundnuts and other oil seeds are more freely brought into the market.

(*c*) *Simsim.*—The acreage under this crop is considerable, especially in the Lango district of the Eastern Province. The quantity available for export is, however, largely governed by the cotton crop and the position is the same as in the case of groundnuts.

The table below shews the exports of groundnuts and simsim since 1911:—

	Groundnuts Tons.	Simsim Tons.		Groundnuts Tons.	Simsim Tons.
1911-12	458	693	1919-20	57	1,169
1912-13	589	1,570	1920	12	2,150
1913-14	384	896	1921	2	1,003
1914-15	8	426	1922	507	2,796
1915-16	85	1,963	1923	175	1,435
1916-17	182	1,904	1924	89	740
1917-18	48	867	1925	41	214
1918-19	45	47	1926	380	194

From 1st January, 1924, the figures represent actual shipments from Mombasa, whereas figures prior to that date represent exports from Uganda ports.

(*d*) *Chillies.*—Large quantities are grown, but during the year the market has been depressed and exports amounted to 62 tons compared with 113 tons in 1925. Exports of this crop reached their highest level in 1923 and 1924, when 911 and 1,068 tons respectively were exported. In 1923 chillies were valued at over £64 a ton, whilst in 1926 the price was just over £27 a ton.

(*e*) *Sugar.*—The sugar industry is established and a local market is available for the whole of the output, but a small quantity was also exported during the year—*viz.*, 1,255 cwts. valued at £1,599. The well-equipped factory at Lugazi has a capacity of sugar output of 4,000 tons per season and further extensions are under consideration. Cane grows very well and gives a high yield of sugar cane per acre.

In connection with this industry pure alcohol for medical and scientific work is made at Lugazi and very satisfactory progress was made with production of power alcohol and an output of 150,000 gallons a year has been estimated as a normal output. As indicated in my Annual Report last year, the full development of the sugar industry is connected with the question of railway extension into the sugar producing areas.

(*f*) *Tea.*—Tea cultivation is promising and some extension of acreage is reported during the year. The local market absorbs all the present output and the demand for Uganda tea is good. Returns received from three European estates show that 186 acres are under tea, whilst a few small plots are grown by natives. Several varieties are under trial on the Government Plantation, Kampala, and this crop has been grown successfully in a small way by the Department for many years.

(*g*) *Tobacco.*—Serious work in connection with this crop will begin in 1927 as the officer of the Department who has been studying its culture in Nyasaland returned from leave at the end of the year. Experiments will be started in Bunyoro in the Northern Province, and it is hoped that other areas will be induced to take up tobacco production.

(*h*) *Wheat.*—Wheat is grown on a limited scale in Toro and a small output finds a local market. The distance is, however, too great and transport costs too high for Toro flour to compete successfully with imported flour in the large centres of population.

Government Plantations.

8. In addition to the Botanic Gardens, Entebbe, there are three principal Government experimental plantations—*viz.*, Kampala and Bukalasa in Buganda and Serere in the Eastern Province. Smaller experimental stations were also maintained at Fort Portal in the Western Province, Kakumiro in Buganda, Simsa, Busoba and Lira (Ngetta) in the Eastern Province. Serere and Bukalasa are mainly concerned with cotton selection work. The following extracts give some details of the work carried out during the year at several of the plantations, whilst on pages 19—22 will be found reports dealing with Serere and Ngetta.

(*a*) Botanic Gardens, Entebbe.

The gardens were under the charge of Mr. E. A. Ruck, Plantation Manager, until October, when Mr. C. Hazel, Plantation Manager, took over the work.

The year's rainfall was 75·28″ which was well above the average. Meteorological tables will be found in Appendix No. 9.

Labour.—It was possible to obtain sufficient local labour throughout the year.

Coffee.—During the year approximately 250,000 *robusta* coffee plants were raised and distributed in connection with the native coffee industry.

Introduction of Plants.—The number of introductions was considerably smaller than for previous years.

The most interesting of those which have grown are as follows:—

	From whom received.
4 varieties of Sweet Potatoes ...	Director of Agriculture, Rangoon.
7 „ „ „ ...	Bureau of Plant Industry, U. S. A.
3 „ „ „ ...	Director of Agriculture, Trinidad and Tobago.

	From whom received.
Acanthus mollis	Museum d'Historie Naturelle-Culture, Paris.
Campanula carpatica	
Crambe cordifolia	
Cerastium tomentosum	
Crepis grandiflora	
Dracunculus vulgaris	
Genista tinctoria	
Rivina humilis	
Buddleia albiflora	Regius Keeper, Royal Botanic Gardens, Edinburgh.
Buddleia variabilis Veitchiana ..	
Dianthus delicatus	
Gerbera kunzeana	
Potentilla argentea	
Salvia pratensis	
Salvia campanulata	

Seeds of various palms were also received from the Director of Agriculture, Trinidad and Tobago, and from the Director, Bureau of Agriculture, Manila, Philippine Islands, but few of these have germinated at the time of writing.

Distribution of Plants and Seeds.—In addition to the coffee plants mentioned above, the following plants and seeds were distributed during the year :—

PLANTS.		SEEDS.		BUNDLES.	
Economic.	Decorative.	Economic.	Decorative.	Verbena.	Lawn Grass.
5,748	7,094	43 Pkts.	307 Pkts.	7	32

Of the above economic plants, 4,296 were fruit trees given out during the April free distribution.

(*b*) Kampala Plantation.

In his annual report the Plantation Manager, Mr. F. W. Hall, writes :—

Weather.—The rainfall was the highest experienced since 1910, the April fall being a record for Kampala for any one month. Two very heavy storms occurred during the year, on the 26th April when 4·02″ fell, and on the 22nd July when the fall was 4·19″. Of the total rainfall 41·8% fell on thirteen days leaving only 34·15″ which fell on the remaining 216 wet days.

Coffea robusta.—Work on this crop has been confined chiefly to the raising and distribution of plants. Most of these plants have been raised from No. 9 selections, and the demands of district nurseries depleted the stocks to a great extent.

A few small plots have been planted up with outstanding types of *C. robusta* raised from seed obtained from various native gardens.

Further selections have been made in native coffee shambas and plots will be put down under these selections in the coming year. It is interesting to note that several of these are the progeny of our No. 9.

It is hoped to gradually cut out all the old *C. robusta* areas on the plantation and fill up with the best types available so as to ensure a supply of really good seed, and to carry out further selection work.

C. arabica.—All the old areas on the hill have been cleared of *C. arabica* as these areas have been earmarked for building purposes and any time spent on them would be wasted.

The *C. arabica* under the Grevillea shade has, however, been kept for the purposes of manurial trials, which are now being conducted by the Agricultural Chemist. Lime, cow manure and artificial farmyard manure ("Adco") are being tested for effects on the coffee.

An acre block of young *C. arabica* under rain trees shade is to be utilised for pruning experiments by the Coffee Officer.

Coffee Distribution.—Coffea robusta.—Plants, 116,400 ; seed, 1,716 lbs.

Of the plants a little more than a half were raised at Entebbe, the plants being distributed from here as more convenient for district nurseries.

A few thousand plants still remain on hand and seed is being sown as rapidly as received.

Rubber.—The chief experiment carried out has been the Sculfer *versus* the Burgess knife. The data, as regards yields, favour the Burgess.

The brown bast experiment was concluded during the year, as no further data of value would be obtained by carrying it on.

Particulars of these experiments have been published in Departmental Bulletin No. 18.

Steps have been taken to select all good yielding trees, and, in the next year, trees that have not been in tapping since 1924 and earlier, will be gone over. Eventually records of all good yielders on the plantation will be available, and when they have covered a reasonably long period the best will be chosen for budding purposes.

To the end of the year the following are the yields obtained from a few trees under observations excluding scrap rubber.

Tree No.	Dry Sheet Rubber Yield.	Period.
22—27	15·4 lbs.	11½ months.
19—90	7·75 ,,	8 ,,
19—96	8·92 ,,	8 ,,
20—49	6·00 ,,	5½ ,,

Of the above, No. 22—27 was for 7½ months tapping daily, the remainder alternate days.

Tea.—The number of deaths during the latter part of the year in the new experimental area which was planted up early in the year was rather high and in most cases due to white ants, but remaining plants look well. The blanks will be filled in the coming year. The varieties in the area comprise Assam Indigenous, Thanai Assam, Kalline, and our Assam Indigenous.

Other Crops.—The leguminous cover crop trial was brought to a close during the year. selections having been made of types for trial under shade in the coming year.

A few varieties of sweet potatoes and cassava were imported from India, United States of America and Jamaica. These were put in for stock purposes and most of the sweet potatoes have been forwarded to Bukalasa.

Grasses.—A few new grasses were obtained by the Botanist and put down in the plot set aside for them.

Nursery.—Work in this section has again been devoted to the raising of *coffea robusta* plants for distribution, and attention has been given to the raising of fruit trees and small quantities of decorative plants. A good deal of time was occupied in repairs to shade structures, and watering, and enlarging the nursery.

Distribution of Plants and Seeds.—

Tea.		Miscellaneous. Economic.		
Plants.	Seeds. No.	Plants.	Seeds.	Packets.
4,062	100	1,352	2,234 lbs.	1

Food Crops.

9.—The paramount necessity of keeping attention focussed on the maintenance of adequate areas of food crops, especially in the chief cotton producing districts, has been brought to the notice of District Commissioners and Agricultural Officers from time to time during the year. Experiments have been going on at Serere and other plantations for some time in connection with selection and improvement of various staple food crops, *e.g.*, millet (bulo or wimbi), beans, sweet potatoes, etc., and useful work has been done in this direction.

The main food crops have on the whole yielded well during the year, although poor crops of millet were reported in some cases, notably in South Lango, in which district groundnuts and beans are said to be increasing in popularity.

Cassava has increased in Teso and Bugwere districts, and this crop is an excellent reserve food supply in times of scarcity.

Ploughing.

10. The number of ploughs in use in Teso district has increased from 1,680 last year to 2,710 in 1926. Ploughing has made some slight headway in Lango district, but the number of ploughs in use is still small. A ploughing school was maintained at Kabiramaido during the year, and thirty-three men were trained and 174 oxen were broken to work.

Progress was also made in Bugwere district in Pallisa, where schools were opened at four centres. In this county, however, whilst there are plenty of young cattle, there appears to be a scarcity of those from three years of age and upwards, probably due to the rinderpest outbreaks in recent years.

Amongst the Nilotic tribes of the Eastern Province the use of the plough is extending and its advantages are now realised in many areas, but the purchasing capacity of the smaller cultivators for a comparatively expensive implement like the plough is largely governed by the price of cotton. An attempt was made in Kumi County to induce owners with incomplete teams of oxen to combine with one another, and this met with a certain measure of success.

The Ploughing Instructor, Mr. Baird, who was in charge of the ploughing instruction in Teso during the year, writes as follows:—

"Owing to the reduced prices which prevailed for cotton last season the demand for ploughs was very much smaller and quite a number were left unsold. This does not mean to say that the people were less keen to own ploughs, the opposite being the case, and for ploughs lying at Bugondo Seed Store there was a perfect rush to have them on advance or loan. These ploughs were all issued to people in Serere Saza during May."

The demand for harrows of both types available, Zig-zag and Planet Junior, is increasing slowly, and a few chiefs and more enterprising peasants now own them.

Agricultural Education.

11. The report of the Superintendent of Agricultural Education will be found on pages 15—16 and attached to this report is a memorandum drawn up by Mr. Staples for the information of the Advisory Council of Education's meeting held on November 29th.

Several Agricultural Officers have been members of the various District Boards of Education during the year.

Agricultural Chemistry.

12. The Agricultural Chemist was still unable to carry out laboratory work owing to the lack of accommodation.

The following extracts from his report are given:—

"*Experimental.*—Experiments on the conversion of "Lusenke" into synthetic farmyard manure by the "Adco" process were started early in the year on the Government Plantation, Kampala, and on the Hoima River Estate. In each case it was noted that the material inside the stack did not rot well unless the stack was turned. The rotted material has been applied to coffee and observations on the crop will be made. Another quantity of the "Adco" compound has arrived and experiments will be carried out on the effects of size, shape and method of packing of the stack, on the rate of rotting.

Numerous estates in European hands have been visited and manurial trials have been started on the Hoima River Estate. The materials used are:—Guano, rotted cotton seed, cotton seed ash, wood ash, rotted parchment and pulp. The value of the lime as a soil amendment is also being tested.

Seed of *Crotolaria striata* has been given to those planters desiring to do green manure trials. Other leguminous crops are being tried on the Government Plantations at Kampala and Bukalasa.

Soil Survey.—During the year tours have been made in the Eastern and Northern Provinces on soil survey work. Numbers of soil samples have been taken and bottled to await detailed analyses."

Agricultural Shows.

13. In December a very successful Native Agricultural Show was held at Kaliro in Busoga district, which aroused considerable interest amongst chiefs and peasants of the district. Entries were numerous in all classes, but particular interest was shewn in the cattle section.

New Agricultural Laboratories.

14. Work on this building was started by the Public Works Department in October and rapid progress has been made.

It is hoped that the building will be finished and equipped by the end of 1927. This laboratory, which is situated on the Government Plantation, Kampala, will be an asset to the country and provide ample facilities for the scientific staff to work under ideal conditions.

A plan of the building will be found at the end of this report.

Departmental Bulletins.

15. The list of bulletins available is given at the end of this report. Four new bulletins were issued during the year, two dealing with *Coffea robusta*, Nos. 14 and 15, and one with cotton experiments at Serere, No. 16, and one with Para rubber, No. 17. No. 7 on coffee was also brought up-to-date.

A cyclostyle bulletin was also issued monthly dealing with the cotton crop.

Agricultural Conference.

16. The Director, the Botanist, the Entomologist, and the Cotton Botanist represented Uganda at the Agricultural Conference held in Nairobi in August, which was attended by delegates from all parts of Africa. Papers were read by Uganda delegates on cotton and *robusta* coffee.

Entomology and Mycology.

17. The reports of the Entomologist and Assistant Entomologist and the Acting Mycologist are enclosed and give full details of the work done during the year.

Cotton Botanist's Work.

18. The Cotton Botanist, Mr. G. W. Nye, went on leave in October, and Mr. A. B. Killick, Agricultural Officer, has been carrying on the work in his absence. The results of the first year's work have been published as a Departmental Bulletin No. 16, and the abbreviated report by Mr. Killick for the year under review will be found on page 23.

Agricultural Statistics and Meteorological Returns.

19. Full details will be found in the Appendices at the end of this report.

S. SIMPSON,
Director of Agriculture.

ANNUAL REPORT OF THE SUPERINTENDENT OF AGRICULTURAL EDUCATION.

Organization of Work.

1. I reached Uganda from leave on January 11th and resumed charge of Agricultural Education work from that date. In accordance with instructions, I at once got into touch with the Honourable the Director of Education, and it was decided to concentrate at first upon the Normal schools for the training of teachers for the Elementary Vernacular schools. This work, in view of the fact that it should influence, eventually, through the Elementary Vernacular schools, the bulk of the people of the Protectorate, appears to be of first-rate importance and it has, in consequence, occupied a considerable portion of my time during the year.

Normal Schools.

2. Three of these were established during the year :—

White Fathers' Mission, Bikira, in Masaka District.
Mill Hill Mission, Nazigo, in Bugerere
C.M.S. Mukono, in Kyagwe.

I paid visits lasting several days to each of these schools, as follows:—

Bikira, during March and September.
Nazigo, during September.
Mukono, during July, in addition to many day visits from Kampala by car.

During August I proceeded to Ngora, in the Teso district of the Eastern Province, where both the C.M.S. and the Mill Hill Mission will have a Normal school. These schools had not been started at the time of my visit, but I discussed at some length, with the missionaries in charge, the scheme for the agricultural part of the training. As this work will be more immediately under the Senior Agricultural Officer or the Agricultural Officer, Serere, I spent a few days there and outlined the plans upon which I was working in other places.

Each of the three above-mentioned schools has now a school garden, and the work has been organised to give it as high an educational value as possible.

Early in this work it was felt that the European principals of these schools would need a good deal of detailed assistance if the agricultural work was to conform to modern educational methods; the need was the more pressing as no elementary text book was available dealing with a tropical flora or dealing with rural science under tropical conditions. A start was therefore made with a series of notes which, perhaps, may be best described as "Nature Study Notes," these are intended to act as guides to practical work in connection with elementary rural science, and deal with common local crops and wild plants, soil conditions, and so forth. By the end of the year some thirty of these had been prepared and issued in the form of cyclostyled copies, which, if the series are to be issued eventually in book form, would form rather more than one-third of the book; it is hoped to have the remaining two-thirds finished before the end of 1927.

Makerere Course.

3. The one student of Makerere College who was reading Agriculture started his third, and final, year in January, and this work was taken over by me at the beginning of the year.

In spite of the difficulties that are found to arise when dealing with a class composed of only one student, very fair progress was made during the year, the course being modified as experience was gained.

District Education Boards.

4. I was appointed a member of the Mengo, Entebbe and Mityana District Boards and attended all the meetings of these during the year.

Grants were made to seven Elementary Vernacular schools in Mengo district, five in Entebbe district, and two in the district administered from Mityana.

General Agricultural Work.

5. On the departure of Mr. Maitland, Government Botanist, in October, the general supervision of all work carried on at the Experimental Plantations at Kampala and Bukalasa came under my control. Lines of work for 1927 were discussed with Mr. Maitland before he left, and also with Mr. Clay, Agricultural Officer, both then and later, in December, when he took up his quarters at Bukalasa. Detailed reports on this work have been submitted in the reports of the Agricultural Officer and of the respective plantation managers.

Closely connected with this has been the extension work with *robusta* coffee, and during the last two months of the year a good deal of time, thought and travelling had to be devoted to the finding of further seed supplies of suitable types of this coffee.

Botanical Work.

6. Since the departure of Mr. Maitland the general supervision of the Botanic Gardens, Entebbe, had fallen to me.

A certain amount of field ecological work had been undertaken during the year, mainly in connection with education.

Kampala Museum.

7. This museum came under my charge early in the year. Unfortunately, time was not available to do justice to this work. To anyone interested in anthropology and ethnology and possessing a sufficient amount of leisure this work might be one of real pleasure.

E. G. STAPLES,

Superintendent of Agricultural Education.

AGRICULTURAL EDUCATION IN NORMAL SCHOOLS.

Agricultural education is now a regular part of the teaching given in Normal schools for the training of teachers for the Elementary Vernacular schools. The object in view is not so much the definite teaching of Agriculture as a vocational subject but rather a general training that will tend to give the students, and later their pupils, an interest in their rural surroundings. The older, so-called uneducated, generation still possesses a considerable amount of what we may call "country lore," but the tendency on the part of the younger people is to despise this as not being in keeping with their ideas of education. Only the other day a member of the Department of Agriculture was looking for specimens of a certain plant that was showing an interesting amount of variation under natural conditions: the older natives, working in the fields, knew the plant well by its Luganda name and made useful suggestions as to where they had seen specimens growing; some younger natives sitting in a hut near by said that they had never heard of the plant, and were obviously much more interested in mending a puncture in a bicycle tyre, in which they were engaged at the time. There is no reason why this interest in country life may not be reawakened in the younger generation if we can secure the whole-hearted co-operation of the school authorities in the various parts of the Protectorate.

The pivot round which this rural teaching should turn is the school garden. These gardens, varying in size from half an acre up to two acres, have been started at each of the Normal schools; and hedge plants, seeds and cuttings, etc., have been supplied by Government. The planning and laying out of the garden, the measurement of plots and such details as the making of square corners all afford practical application of the elementary arithmetic and mensuration that has been learnt in class during other hours. The necessity of letting the pupils themselves make these measurements needs stressing, as otherwise many valuable opportunities of learning to *do* things (as opposed to mere reading about them) may be missed.

The school garden provides an opportunity for cultivating all of the usual tropical crops, and of trying out variations in cultural methods, such as closer or wider planting, ridge planting *versus* flat, or manuring as against no manure. The garden affords opportunities for learning principles of improved agricultural practice, such as seed selection (using, for instance, such a crop as maize); green manuring, *e.g.*, the effect of digging in a previous leguminous crop, such as mpindi, before a crop of cotton); or the selection of suitable local varieties of a crop (such as the sweet potato).

Unless intelligent ideas, such as these, are constantly kept to the fore, the pupils will tend to look upon the cultivation of the garden as mere porter's work and of little account. The object should be to make the garden as much as possible an outdoor laboratory, where a real interest in plants and how they grow may be acquired. This will need a lively imagination and some power of initiative on the part of the European in charge of the Normal school. To help the latter, illustrated notes, in the vernacular, on nature study, using the local crop and wild plants as examples, are being prepared and issued as fast as opportunity will allow, but it is only the man with a keen interest in nature out-of-doors who will make this teaching go with a swing. All sorts of interesting studies can be done in this way, such as noting the colonisation of a cleared plot by weeds, finding out how each particular species arrived, its rate of growth, its means of spreading, whether by quick seeding and easily disseminated seed (as in the case of the two common ruderal compositae—Bidens, and the little yellow Senecio) or by underground rhizomes, as in "lumbugu." The effect of overwatering or shade upon the natural vegetation of a plot could be tried; or, again, the influence on both the flora and soil fauna of a heavy dressing of kraal manure. Going but a short distance afield the main constituents of the chief units of vegetation, *e.g.*, elephant grass association, rain forest fringing a valley, or, again, reed swamp, could all be studied and the commoner plants characteristic of any of these *habitats* could be listed and their particular types of root and habit growth could be investigated. Such a very common weed as the various species of Commelina (the native "nanda") will afford excellent opportunities of studying adaptation of form to environment, as species can be found, varying from the swamp type, growing actually in water, and with long, unbranched mud roots; through the species common on cultivated soil, with their quick-growing creeping stems that enable it to compete on equal terms with other small herbaceous weeds; until we arrive at the other end of the series in the species found in regions with slightly longer dry periods (*e.g.*, Northern Bulemezi) and possessing bulbous root-stocks and tall flowering stems capable of carrying the flowers to the level of the vegetation common to those parts. Similar examples of useful and intensely interesting nature-study work could be cited without number, but a really keen man will find little difficulty in working these out for himself.

These suggestions may seem to have gone some way from the strict consideration of the study of agriculture, as such, but they may help to open up lines of work that are equally fundamental with the more obvious operations connected with school gardening in its narrower sense.

These latter will include practice in the making of nursery beds and the raising of seedlings (operations not nearly so simple as many people would believe), budding and grafting, the relative effects of hoeing and spade digging, planting at specified distances, and so on.

No hard and fast rules for all this agricultural work can be laid down in these early days, but as experience accumulates, the varying needs of schools in the four different provinces will be learnt. Government can do its best in giving advice, suggesting lines of work, and, to a certain extent, in providing details of work along some of these lines, but in the end, the measure of success attained in agricultural education in normal schools will depend very largely upon the initiative and enthusiasm of the Principal in charge of the school.

ANNUAL REPORT

OF THE

SENIOR AGRICULTURAL OFFICER

IN CHARGE OF AGRICULTURAL WORK—TESO AND LANGO DISTRICTS.

Meteorological.

1. The main feature of the weather of the past year was the abnormal and well distributed rainfall throughout the year, December being the only month without precipitation. Heavy rains in August and September caused some flooding of the low lying areas in Teso and Lango. Hailstorms were of frequent occurrence and caused considerable damage to crops in certain areas.

Of Lango, the Agricultural Officer, Mr. D. Stedman Davies, writes:—"The year 1926 was a record wet year with a total rainfall 65·91 inches, or 10·93 inches above the average. The rainfall was much too heavy for all crops, also its wide distribution, or the large number of days on which rain fell, intensified the effect on plant life, causing an excess of vegetative growth and a decrease in yields. This effect was more pronounced in cotton. The May sowings developed into big plants with single long woody main stems, carrying few laterals and consequently a small number of bolls."

General District Notes.

2. *Cotton Season, 1925-26.*—An unusual feature of the above season was the abnormal rainfall in December and January, and absence of any prolonged drought. This caused discoloration of the unpicked cotton and resulted in a high proportion of stained and dirty cotton at the buying centres.

The quality of the cotton apart from discoloration was good, the staple being especially strong and ginning out-turn high.

Prices at the opening of the season were up to 18 cents per pound at some of the centres, but fell to 12 and 13 cents towards the end, and the average would not be more than 15 cents all over.

The season was a short one, and the bulk of the crop was marketed by the end of February. Ginning was carried on expeditiously and most of the crop was ginned, baled and shipped by the end of May. Transport facilities were well organised and there was an entire absence of the congestion of the previous year. A considerable quantity of seed was shipped from Lake Kioga ports.

In Teso the total crop fell short of the previous year's crop by about 15%, which was held to be due to partial failure of the crop and very low yields in Usuku and Kumi Counties. Serere County again did well, and Soroti County gave an average yield.

In Lango the yield per acre was fully one-third less than the previous year. This big drop in yield is difficult to account for. On the one hand the areas may have been over-estimated, on the other bolling may have been sparse on the exposed areas due to unfavourable weather conditions. The crop was obviously affected by the heavy rains in January, and these appeared to do more harm than good.

3. *Cotton Season, 1926-27.*—The season was a normal one and conditions were very favourable for cultural operations up to the end of July. From August to November abnormal rains were experienced, which had a prejudicial effect on many of the crops. All early-sown cotton went to wood, there was profuse bud shedding, pests and diseases were more in evidence than usual, and consequently early pickings were small in quantity compared with previous years.

The simsim and groundnut crops as well as the mtama and bean crops suffered from the prevailing conditions and lower yields were the rule. The sweet potato crop benefitted by the moist conditions, and in this case yields were heavier than usual. A gratifying increase in the area of land under Cassava as a precaution against food shortage is to be noted.

The main food crop, wimbi, was a normal one, but, as usual, the yield varied from low in some areas to high in others. There is reason to fear that the average yield per acre of this important crop is less than it was twelve to fifteen years ago. How far this may be due to increased cotton production is a point worth investigating. At any rate there seems little doubt that careless and inefficient cultivation of the cotton crop is having a decided effect on the succeeding wimbi crop. This is borne out on the experimental stations, where greatly increased yields have been obtained from plots which were cultivated deeply by ploughs against plots cultivated in the native fashion.

4. *Cultivation by ploughs.*—The returns of the Ploughing Instructor show a considerable increase in the number of ploughs in use in Teso district. Kumi County as usual takes the lead with 1,935 ploughs out of a total of 2,710 for the whole district, Usuku County taking second place with 382 ploughs. In spite of the foregoing fact Kumi County has failed to maintain its lead in cotton production and areas per taxpayer as compared with other parts of the district, moreover the production of subsidiary crops such as groundnuts and simsim have also fallen off in recent years. As an example the cotton areas for 1926 show the following analysis:—

County.	*Number of taxpayers.*	*Area in acres.*	*Area per taxpayer in acres.*
Soroti	16,200 ...	29,666 ...	1·83
Serere	13,200 ...	26,252 ...	1·99
Usuku	11,500 ...	14,707 ...	1·27
Kumi	23,450 ...	29,846 ...	1·27

It is not improbable that in estimating the acreages sown, Soroti and Serere Counties, with smaller hand cultivated plots, have been over-estimated, and that Kumi County with larger ploughed plots has been under-estimated.

Instruction work was carried on at four centres in Teso district, and in conjunction therewith experimental plots with cotton and other crops were laid down by the Ploughing Instructor for demonstration purposes.

In the Kumam area of Lango, under the influence of the ploughing school carried on by the Ploughing Instructor, Mr. Allen, at Kabiramaido, cultivation by ploughs made some headway, although the number of ploughs bought by natives is small in comparison with Teso district. In conjunction with this school a series of plot experiments to demonstrate the effects of good cultivation and rotations of crops on crop yields was laid down. These plots were well planned and carried out, and were a source of considerable interest to the local chiefs and natives throughout the season.

As regards the after treatment and preparation of land which has been ploughed, the difficulty has been to find an implement suitable for native use. The ordinary toothed harrow is not strong enough, and the disc harrow, which is an ideal implement, is too expensive for the ordinary native. The writer, while at home on leave during the year, discovered a likely looking implement in Jack's pulverising harrow. It was deemed worthy of a trial in Uganda and the Empire Cotton Growing Corporation kindly agreed to send one out free of cost. If this implement should prove successful, it may be the means of revolutionising the results obtained from ox-drawn implements in the hands of natives.

5. *Native Instructors.*—In Teso district four of the original Baganda instructors are retained as supervisors—one in each county—and under these men are the selected Teso lads, who have been trained on the Experimental Station, and who were appointed assistant instructors on probation early in 1925. Some of the latter have done very good work, while others have been found incompetent and have been replaced by more recently trained lads.

It is scarcely to be expected that these lads will become efficient instructors in the immediate future. They were very raw to start with, and they will need careful supervision and handling and further periods of training on the station in future years.

In Lango district very few of the original instructors are left, and the raw material for the production of instructors locally is less satisfactory and more difficult to train than in Teso.

It is hoped that constant efforts in the work of training on the Ngetta Farm will, in time, result in the production of a number of useful instructors, who will make their presence felt in the crop production of their district.

REPORT ON THE SERERE EXPERIMENTAL STATION.

(*a*) *Cotton Crop.*—

Results of Crop of Year 1925.

1. Main Crop—Type No. N 17.—Area 25 acres.

Total crop	16,000 lbs., A and B qualities.
Yield per acre	640 lbs. seed cotton.
Percentage of lint	30·5%

2. Third Year Selections:—

No. of selection.	Area in acres.	Yield per acre. lbs.	Ginning percentage.
N 19	4	662½	31·5
N 24	4	700	30·9

3. Second Year Selections:—

No. of selection.	Area in acres.	Yield per acre.	Ginning percentage.
		lbs.	
N 5	¼	1,072	29.9
N 6	¼	1,112	28.6
N 10	¼	1,064	30.2
N 11	¼	1,188	30.0
N 13	¼	968	30.4
N 14	¼	1,016	30.0
N 15	¼	1,244	31.6

The results of the examination on the above selections are contained in the Cotton Botanist's report (Table A).

Lime and Green Manuring Experiment.

Lime was applied to the land on 22nd May, 1925, at the rate of 1,920 lbs. per acre.

Beans were used for the green crop, and were sown on 22nd May, and ploughed in on 8th July.

Cotton was sown on 16th July.

First picking was made on 7th December.

The plots were 1/8th acre in size and were arranged in accordance with instructions from the Agricultural Chemist.

The aggregate yields were as follows:—

	Lbs. seed cotton.
Control (3 plots)	474
Lime alone (3 plots)	457
Lime and G. M. (3 plots)	458

(*b*) *Crop of Year 1926.*—The area under cotton in 1926 was reduced to thirty acres, a part of which was used by the Cotton Botanist for experiments in spacing and time of sowing.

The main crop consisted of selections Nos. 19 and 6, the areas being 15 and 8 acres respectively.

Weather conditions were favourable and the crop had a promising appearance up to September 7th, when a very severe hailstorm did considerable damage and spoiled any chance of useful results from the different selections.

(*c*) *Crops other than Cotton.*—The Plantation Manager, Mr. P. Chandler, was instructed early in the year to give particular attention to the carrying out of experiments designed to improve the yields and quality of the food crops of the district, as well as crops such as maize, simsim, etc.

The following extracts are taken from his report:—

"*Wimbi* (*Eleusine coracana.*)—Approximately 5½ acres were sown with this crop, the bulk of which was in the form of experiments, results of which are given later. These, however, must be considered comparative only, such experiments requiring to be carried out over a series of years before results become conclusive, due to the fact that so many unforeseen factors can present themselves from time to time, uncertain and variable weather conditions, varying insect attacks, etc.

Weather in particular upset last season's plans, nearly 3 inches of rain falling within three days of sowing. This caused much soil wash and burying of seed too deep to germinate, and some apparent mixture of seed was seen later.

Germination as a whole was fairly good.

Yields from the Various Experiments.

Experiment No. 1.—Variety trial.—This was carried out with the four varieties segregated the previous year, ¼ acre of each. Seed rate per acre, four pounds.

Each plot was numbered from 1—4 for easy references, instead of making use of the local varietal names.

The yields were:—No. 1, 452 lbs.; No. 2, 511 lbs.; No. 3, 225 lbs.; No. 4, 368 lbs.

Experiment No. 2.—Method of Cultivation.—Two acres were devoted to this, one being mechanically cultivated (ploughed and harrowed), the other cleared of weeds, sown, and covered in by using native hoes, all in one operation.

Each acre, corresponding portions, were further divided and sown with similar amounts of seed, 2—3 lbs. respectively, equivalent to 5 lbs. of seed per acre, with a view to showing any pronounced difference in growth.

There was an appreciable difference in the amount of seed harvested from the plots, 1,763 lbs. from the ploughed plot as against 1,124 lbs. from the other.

Maize (*Zea Mays.*)—Three varieties only were grown, Hickory King, Salisbury White and Potchefstroom Pearl, approximately 5 acres in all.

The latter variety was a re-introduction from Kenya during the previous year, but received too late for planting in 1925.

In addition to the area mentioned, three small progeny plots, two of Salisbury White and one Hickory King, were grown. These were isolated from the rest, and provided plots for further selection work. The seed of these was obtained from one-plant selections made in the field the previous season.

Simsim (*Sesamum indicum*).—In all about five acres were under this crop. Scattered among this were four plots devoted to rate of seed tests, each ¼ acre. Two other plots of similar size were sown in rows, but different spacings, to compare with the plots sown broadcast employing similar rates of seed.

Germination was good all round, but insect attacks soon after caused resowing of the spacing plots. Insects responsible were similar to those reported as attacking the wimbi earlier on.

The results obtained are as under:—

	Area of plot.	Amount of seed.	Method of sowing.	Yield. lbs.
1	¼ acre.	½ lb.	Broadcast.	99
2	,,	1 lb.	,,	110
3	,,	1½ lbs.	,,	93
4	,,	¾ lb.	,,	99
5	,,	½ lb.	Spacing 1′ × 1′	71
6	,,	½ lb.	,, 1′ × 1′3″	76

Four small progeny plots were also grown from single plants of distinct types segregated from the mixed main crop of the previous season. All did very well after surviving insect attacks in the early stage, and sufficient seed obtained after roguing out for further propagation.

Further segregation of varieties from the mixed main crop was carried out again, one plant of each of six more varieties being marked, and later the seed collected separately.

Some diseases were collected as doing damage to this genus of plants, and were identified by the Acting Mycologist. Included among these were *Oidium sp.*, a specie of *Cercospora* and *Alternaria*, *Sclerotium bataticola*, probably *Macrophomia philippinensis*, together with a specie of *Colletotrichum* not previously recorded in this country.

Beans.—In all some thirty odd varieties are now in cultivation here, several of these having been picked from the hitherto mixed seed. In consequence the present amount of seed available obviously varies.

This year no large area was devoted to any one kind as a main crop, but small odd plots were sown at two different periods for increase purposes only. No yields have been taken into consideration.

Included in the above collection are the comparatively new introductions, Tepary bean from Rhodesia and Burmese Soy beans.

The former has again not done much here, being subject to much disease, determined as "common bean anthracnose" (*Gloco sporium Lindemuthianum*). Three other minor fungi were also present in the material sent for examination.

Groundnuts (*Arachis hypogæa.*)—Two ¼ acre plots were grown, one on the level, the other on small moulds.

Germination was good, but animals fancied the young growth from time to time.

Some leaf disease appeared towards the end of the season, and on material sent in the fungus *Cercospora personata* was identified.

The yield showed favour for cultivation upon mounds, 160 lbs. of undecorticated fruits being harvested as against 50 lbs. from the other plot. Many fruits when dug showed an absence of seeds. It is hoped to pay more attention to this crop next season.

Sisal (*Agave sisalana*).—Slight increase of the original plot was made, and so filling up an odd plot of gravelly soil near the approach of the main area of the plantation.

A good supply of useful rope was prepared during the course of the year to supply our needs in the way of planting rope tying purposes for use with the cattle, etc.

Ploughing.—This work was carried out at favourable intervals over a more prolonged season than is usual due to the heavier rains towards the end of the year, but ended rather abruptly when the dry conditions set in early in December.

Less trouble was experienced in getting some of our previous trained lads to return at the beginning of the season, but the daily attendance of these was rather poor at times.

Up to five teams were in the field sometimes during the season."

The above work will be continued next season under a definite system, and it is intended to co-ordinate similar work being carried on at Ngetta Farm, the objects being to establish pure strains of heavy yielding and early maturing types by segregation and inter-varietal tests, and to determine the best methods and time of sowing, rate of seeding, etc.

(*d*) *Training and Instruction.*—This work was continued during the year. A considerable number of lads, chiefly of the Teso tribe, came forward for training, but the material was not as good as that of previous years.

The housing of the pupils has been a matter of some difficulty, and the erection of permanent houses, for which money was voted early in 1925, was not begun until the end of the year under review.

(*e*) *Live-stock.*—There were no additions to the stock on the station during the year. Four deaths occurred amongst the aged stock, and inoculations against pleuro-pneumonia were carried out twice.

R. G. HARPER,

Senior Agricultural Officer.

REPORT

ON THE

NGETTA EXPERIMENTAL STATION, LANGO.

The Ngetta Plantation is now worthy of considerable attention. Financed by the Lango Lukiko, considered by the Lango as their special property, and worked on practicable lines, it is beginning to make itself felt as an example of good agriculture; an example which it is wise to follow as much as possible.

Acreage and Fertility.—The plantation consists of 40 acres under cultivation, of which 29 acres were opened up this year.

All the preliminary cultivation is done by ploughs. The purchase of other implements is under discussion and it is hoped soon to reduce manual work to the minimum.

During the year under review there has been a noticeable improvement in the condition of the soil; deep ploughing and the turning over of rubbish and weeds has enriched the soil in humus and considerably darkened the colour. Each plot is also arranged on a proper rotation basis to keep the land fertile, a different rotation being tried for each plot to determine the most suitable one.

Food Crop.—The year 1926 was a very disappointing one for the food crop experiments. The heavy rains and locust attacks during the first half spoilt the simsim and bulo crop, and no data could be collected.

During the second half, experiments were conducted with mpindi, simsim, groundnuts and beans. Fifteen varieties of beans were brought from Toro in order to introduce a new crop into the district.

These crops have now been picked, but the thrashing is not yet complete and figures are not available.

Cotton.—The Cotton Botanist has fifty 1/20th acre plots for his "spacing and variety" trials. Also an area of 12½ acres is under N 17 for seed production.

A new nursery was made and planted with large quantities of various seeds.

D. STEDMAN DAVIES,

Agricultural Officer.

ANNUAL REPORT OF THE COTTON BOTANIST, SERERE EXPERIMENTAL STATION.

1. Mr. Nye, Cotton Botanist, went on leave on September 23rd, from which date until the end of the year the writer took over the work during his absence.

Mr. Stephens, Ploughing Instructor, was at Serere from October 2nd until the end of the year to help with the work.

2. *Results of the Field Experiments, 1925-1926.*—In the report for the year ending December, 1925, details were given of various spacing and sowing date trials which had been instituted at different centres in Teso. The results of these experiments have been published as a Departmental Bulletin No.16, which can be obtained on application to the Director of Agriculture, Kampala.

3. *Field Experiments, 1926-1927.*—The field experiments in progress this season consist of a repetition and elaboration of those carried out in 1925-26.

4. *Progeny Rows.*—As a result of the analysis of the progeny rows grown in 1925-26 the following strains were selected for growing in increase plots in 1926-27.

S.G. 15.—A selection from Nyasaland. This strain has a long staple and is excellent in quality and it has been selected on these characters alone.

S.G. 26.—Also a Nyasaland selection. There is no outstanding character in this strain, but as a whole it is quite promising.

S.G. 27.—A Nyasaland strain with high lint index and a fair staple.

S.G. 29.—A high yielding strain with a high lint index combined with a high ginning out-turn. The staple is full $1\frac{3}{16}$ inches.

In addition to this selection of the best of last season's progeny rows for increase plots, certain individual plants of last year's progeny rows were selected for growing in progeny rows this season.

These selected plants may be the extremes of normal variation, which can only be ascertained from this season's results.

All these selections are long stapled, with the exception of S. G. 3-2 which is from a Salisbury variety and has been chosen on account of its high loculus number and large number of seeds per boll. L. G. 4-15 is rather short stapled but it has a very high ginning percentage combined with high lint index.

The other plants are the most promising of their row and should show little variation this season, as selfing and roguing out should have produced something approaching a pure line.

5. *Other Progeny Rows.*—Besides the progeny rows for selection purposes a number of different species of *Gossypium* were grown during the season 1925-26 to find out their general behaviour under climatic conditions different to their own.

Similar records to those made on the other progeny rows were kept for each row. Altogether 45 progeny rows were grown and over 14,000 bolls examined in the laboratory during the season 1925-26. This season there are 33 progeny rows in addition to the crosses mentioned below.

6. *Cross Breeding.*—The following first generation crosses are being grown :—

S.G.X. 1—Salisbury x Nyasaland 12.
T.G.X. 2—Meade x Sea Island.
T.G.X. 4—Sea Island x Acala.

The following second generation crosses are being grown :—

T.G.X. 2—4.
T.G.X. 4—1.
S.G.X. 1—5.

On the first two of the above (T.G.X. 2—4 and T.G.X. 4—1) observations are being made as to the type of flower and boll and five bolls from each plant of each F2 will be recorded in a similar manner to the bolls in the progeny row.

It has been noticed that these crosses do not stand up to unfavourable weather conditions as well as the more hardy purely upland strains.

7. *Selection of quarter-acre plots* grown in 1925-26 for propagation in eight-acre plots in 1926-27.

Table A gives the results of the examination of the quarter-acre plots 1925-26 from the progeny rows 1924-25.

TABLE A.

Plot.	Total yield ¼ acre. lbs.	Weight 100 lbs.	Lint Index.	Ginning out-turn.	Lint length.	Remarks.
N. 5 ...	268	12·05	5·12	29·9	27·7	Medium strength, irregular.
N. 6 ...	278	11·28	4·53	28·6	30·9	Strong.
N. 10 ...	266	11·40	5·00	30·2	29·7	Strong, slightly harsh.
N. 11 ...	297	10·62	4·68	30·0	29·0	Strong, harsh.
N. 13 ...	242	11·70	5·14	30·4	29·2	Strong.
N. 14 ...	254	11·62	5·01	30·0	29·4	Strong, silky
N. 15 ...	311	12·43	5·73	31·6	28·5	—

As a result of this examination only one N. 6 was selected and this is being grown in an eight-acre block this season.

A. B. KILLICK,
Agricultural Officer.

ANNUAL REPORT
OF
THE GOVERNMENT ENTOMOLOGIST.

1. Excepting three weeks' absence of the Entomologist in Kenya, both the Entomologist and his Assistant have been in the Protectorate for the whole year. It has, therefore, been possible to pay more attention than in past years to cotton insects which are dealt with in Mr. Hancock's report.

There is no extensive outbreak of insects to be recorded. A number of new pests, mainly of minor importance, have been observed. Below is given a summary of entomological work together with records of injurious insects.

Coffee.

2. (*a*) *Antestia.*—As it was suspected by Mr. China, of the British Museum, that two species of *Antestia* occurred on coffee in Uganda, experiments were undertaken to settle the question biologically. Numerous crosses were attempted with the small and large spotted forms segregated as they became adult; the females laid eggs at much longer intervals than is normally the case and all the eggs proved infertile. When put with males of similar type the females produced fertile eggs.

Experiments were carried out during March near Masaka for control of the coffee bug by means of sodium arsenite and sugar solution. Considerable scorching of foliage and berries was produced on trees sprayed with the bait; numbers of bugs were killed but definite results could not be obtained owing to the comparatively small numbers of bugs present and to ants carrying away dead bugs. The onset of rainy weather prevented further trial of the arsenical bait until June when the planter with the most coffee bugs kindly resumed operations. Later, the experiment was abandoned, it is understood, mainly because of damage by the arsenic to aerial parts of the tree. As the formula for the insecticide was the same as that used successfully for several years in Tanganyika it would seem that he unsatisfatory results were due to employing a different quality of sodium arsenite. This subject will be investigated when the Agricultural Chemist is able to undertake analyses of chemicals.

Antestia has continued to be prevalent on a part only of one estate in Toro. During October practically all the bugs were adult but no eggs could be found; continued rain and lack of berry food are probably unfavourable to egg production. Eggs from Toro district obtained in April yielded, in addition to the parasites mentioned in last year's report, a species of *Pleurotropis* which Dr. J. Waterston states is probably a hyperparasite. Attempts to parasitise *Antestia* eggs by means of the species other than *Telenomus truncativentris*, Dodd., and *Hadronotus antestiæ*, Dodd., were unsuccessful.

(*b*) *Asterolecanium hancocki*, Laing.—This new scale, first recorded in 1925, was prevalent for some months. Examination during January shewed the scales to be highly parasitised. Some of the infested trees died but the scale insect was not present in sufficient numbers to be the cause of death. Examination of the roots of dying trees proved the presence of a fungus. Dying trees on which the *Asterolecanium* was barely present were submitted from a neighbouring estate, thus confirming the view that the insects were not the prime factor in the death of the trees.

(*c*) *Pseudococcus lilacinus*, Ckll.—(Previously recorded as *P. citri*, Risso. and *P. coffeæ*, Newst).—Coffee trees treated in 1925 with paradichlorbenzene for control of this root mealy-bug were examined a year after treatment. Fifty per cent of trees, treated with 2½ ozs. of the insecticide applied to roots bared to one foot from the stem, proved free from mealy-bug. With such large trees baring of the roots within a circle of three feet diameter and applying 3 ozs. of the insecticide would seem necessary, but with smaller trees the dosage must be reduced according to age.

(*d*) *Bixadus sierricola*, White.—On two estates near forest this borer has continued to be prevalent and it would appear that forests provide reservoirs for the pest which migrates to coffee.

(*e*) Other Coffee Insects.—Minor attacks by the following insects have been observed :—*Megalognatha rufiventris*, Baly, attacking *robusta* coffee leaves; a pink mealy-bug with little wax checked by a Lycaenid caterpillar; a species of thrips, other than *Diarthrothrips coffeæ*, Will., on *robusta* coffee; *Metadrepana glauca*, Hamps.—leaf eating caterpillar; *Stephanoderes hampei*, Ferr.—berry-borer; *Icerya* sp. on *robusta* coffee, attacked by a Chalcidoid parasite and by the Coccinellid *Novius ferrugineus*, Weise; *Lecanium ? africanium*, Newst.; *Jamesonia* sp. (*Halticidæ*)—eating the pedicels of berries.

(*f*) Abortion of Coffee Flower-buds.—The non-production of crop due to coffee flowers failing to open has caused great anxiety among coffee planters in certain areas. The trees generally showed luxuriant vegetative growth and produced an abundance of flower buds but almost all the flowers withered at the stage when the petals should have opened. Both shaded and unshaded coffee were affected.

Considerable time has been spent on the investigation of this problem with the object of determining what insects, if any, were involved. Some five species of *Capsidæ* new to this collection have been found sucking flower buds in the affected areas, but in every instance the insects were remarkably scarce and it seems unlikely that they could be responsible for more than a negligible amount of damage. No other insects likely to cause such damage have been noticed on coffee flower-buds.

The opinion is generally held that the cause of the trouble is the abnormal rainfall. Lower temperatures of air and soil, reduced sunshine, waterlogging of the soil, and high humidity of the atmosphere may all have adverse effects on flower development.

Sugar-cane.

3. A pest of this crop recorded for the first time in Uganda during June proved to be the caterpillar of *Sesamia vuteria*, Stoll. The caterpillar bores into the furled leaves near the apical bud and feeds on the young leaves; its presence is indicated by withering of the central leaves and the condition known as "dead heart" is produced. Some two per cent of shoots of rattooned and seedling canes were killed; older canes were not attacked. Satisfactory control was obtained by cutting out "dead hearts" and destroying the contained caterpillars. A Tachinid parasite not yet identified was reared later, and its occurrence will modify future control work; the caterpillars will be kept in order to rear the parasites for liberation.

The mealy-bug, *Pseudoccus sacchari*, Ckll., is still a very minor pest. It shows a marked preference for cane rendered unhealthy by other factors.

Two comparatively small areas of cane were attacked by termites which destroyed the rhizomes. Examination of affected plants showed that the root system was diseased. From such material the Mycologist isolated a species of *Fusarium* which is probably the primary cause of the damage.

Tea.

4. A negligible amount of damage has been caused to tea leaves by the Capsid *Holopeltis bergrothi*, Reut., and a small red mite not yet identified.

Native Food Crops.

(*a*) Sweet Potato.—*Cyclas compressus*, Hartm., has occurred as a minor pest of this crop. An unidentified Braconid external parasite of the larva has been reared.

(*b*) Plantain.—The weevil *Cosmopolites sordidus*, Germ., has continued its depredations in the Nakifuma area. The recommendations made during 1923 for control of the pest at this place were not carried out by the peasants, with the result that most trees are now infested and newly planted suckers are killed almost immediately.

(*c*) Maize.—The stem boring caterpillars *Busseola fusca*, Hamps., and *Sesamia vuteria*, Stoll., have been observed.

(*d*) *Eleusine coracana* (MILLET).—In the Northern Province considerable damage was caused to young plants by small grasshoppers (probably *Chrotogonus* sp.). Spasmodic rains necessitating a series of plantings proved favourable to the pest. Similar damage in Buruli was also reported. A Meloid beetle? *Epicauta* sp. was submitted as a leaf-eater of this crop.

(*e*) BROAD BEAN.—Mealy-bug (unidentified) on the roots.

(*f*) *Phaseolus vulgaris*.—The larvae of a ? Chloropid fly attacked the stems and caused death of the plants. A Hymenopterous parasite was reared.

(*g*) *Cajanus indicus*.—The larvae of *Laspeyresia ptychora*, Meyr., were observed as a minor pest of the seeds.

(*h*) TURNIP.—Several outbreaks have been experienced of attack by the larvae of a saw-fly (? *Athalia* sp.) on the leaves, many plants being completely defoliated. The tap roots were bored by the larvae of *Hellula undalis*, Fab. (*Pyralidae*).

(*i*) CARROT.—The caterpillar of the Pyralid moth *Rhodochrysea superbella*, Hamps., bored into the tap root and caused considerable damage in one plot.

(*j*) MARROW.—The fruit flies *Dacus brevistylus*, Bezzi, and *D. vertebratus*, Bezzi, have attacked imported varieties of marrow.

Miscellaneous Pests.

6. *Crossotarsus excavatus*, Samps. (*Platypidae*)—boring in stems of *Albizzia* sp.

Hypothenemus eruditus, Westw. (*Scolytidae*)—in diseased branches of *Cedrela toona*.

Cutworm? species (greasy type)—on young *Eucalyptus*. *Chloridea armigera*, Hub.—eating buds of *Dianthus caryophyllus* (Carnation).

Brithys pancratii, Cyr. (*Noctuidae*)—the caterpillars have attacked various species of lilies destroying both bulbs and leaves.

Asbecesta cyanipennis, Har. (*Galerucidae*)—was reported as a leaf-eater of *Sesamum indicum* (Semsem).

Advice was sought on the following matters:—Insects in stored beans, rice and ground nuts; termites in permanent buildings; carpenter bees in house timbers; and ants at the roots of fruit trees.

List of Pests.

7. In accordance with the resolution made at the Agricultural Conference held during August at Nairobi, a list of insect pests in Uganda was compiled and sent to the Secretary of the Entomological section of the Conference. A copy was also sent by request to the International Institute of Agriculture at Rome.

Mulberry Silk.

8. With the kind assistance of the Director of the Nanisana Experiment Station, Madagascar, further attempts are being made to introduce the polyvoltine race of silkworm. The only consignment received last year died *en route*.

Identifications.

9. The following were received for identification:—Ticks, *Tabanidae*, *Glossina* and other *Muscidae* from the Veterinary Department; *Glossina* from District Medical Officer, Toro; one species of *Coccidae* from the Conservator of Forests.

Specimens received for the Collection.

10. Seven hundred insects of various orders from Dr. G. D. H. Carpenter, M.B.E.

Collections of ticks and a few insects from Mr. J. T. Kennedy.

Five collections of ticks from the Game Warden.

Larvae and adults of *Diparopsis castanea* from the Government Entomologist, Nyasaland.

Acknowledgments.

11. As in previous years the Imperial Bureau of Entomology has rendered great assistance by identifying insects. During the past two years the following specialists have kindly undertaken identification of insects in their particular groups:—Mr. E. Brunetti, Mr. W. E. China, Mr. F. W. Edwards, Dr. J. J. E. Gillet, Mr. F. Laing, Mr. J. R. Malloch, Mr. E. Meyrick, Lt.-Col. W. Sampson, Mr. W. H. T. Tams, Dr. J. Waterston, A. Boucomont, V. Laboissiere Dr. G. Lallemand, H. H. Karny, Dr. W. Horn, Dr. F. Spaeth, Dr. J. Obenberger, M. Bernhauer, F. Ohaus, A. Knisch, and A. Zimmermann.

During visits to the laboratory Baron Surcouf and Dr. Carpenter respectively kindly undertook the naming of *Tabanidae* and Lepidoptera.

Plant Imports.

12. One hundred and eighty-seven packages of plants were examined during the year, and two imported contrary to regulation were destroyed.

The following insects were intercepted:—*Dinoderus pilifrons*, Lesne (*Bostrychidae*) in bamboo from India; *Araecerus fasciculatus*, de Geer (*Anthribidae*) in seed of *Guarea thompsoni* from Nigeria; and *Setomorpha rutella*, Zell (*Tineidae*) in bulbs from Seychelles.

General.

13. The collection of pinned insects has been given the necessary attention and specimens of most of the unnamed species have now been sent to the Imperial Bureau. The spirit collection of immature stages has been overhauled and augmented.

The Entomologist attended the Agricultural Conference in Nairobi during August.

Twenty-six visits were paid to estates controlled by non-natives.

H. HARGREAVES,
Entomologist.

ANNUAL REPORT
OF
THE ASSISTANT ENTOMOLOGIST.

1. During the past year most of the work on cotton pests has been taken over from the Entomologist, a considerable amount of time has been spent in teaching the single Makerere student, and any further available time has been spent on a preliminary survey of the mosquitoes of Kampala. As usual it has been necessary to spend some time in arranging and keeping in order such groups of the reference collection as the Entomologist has handed over to me.

Pests of Cotton.

2. During this year it has been possible to pay two visits to the Eastern Province and it is therefore probable that nearly all the cotton-feeding insects which occur in Uganda have now been recorded.

Insects attacking the Bolls.

3. (*a*) Boll-Worms.—Four boll-worms have now been recorded, namely, two species of "spiny boll-worm" *Earias insulana*, Boisd. and *Earias biplaga*, Walk., the latter being the commoner; *Heliothis obsoleta*, Fabr., the "corn-worm" which has also been recorded from gram; and *Argyroploce leucotreta*, Meyr. This last was referred to as a reddish boll-worm in my report for 1925 but has now been identified by Mr. Meyrick. The same species undoubtedly attacks cotton in Nigeria but some doubt has been expressed as to whether it is the same insect as occurs in South Africa as a pest of fruit but not of cotton. The larva of *Pyroderces coriacella*, Snell., which occurs in decaying bolls appears to be merely a scavenger.

Damage by *Earias* spp. was more noticeable in the early part of the season, buds and young bolls being destroyed. *Heliothis obsoleta* was also responsible for damage at this stage. Damage to the older bolls, *Argyroploce leucotreta*, has been reported from some districts, but so far it has been personally observed on a few occasions only, and then not in large numbers. The reason for the decrease in numbers of *Earias* spp. and *Heliothis* on the advent of the dry weather has not been explained. The only parasite recorded has been an external Braconid parasite of *Earias biplaga* apparently not unlike *Microbracon lefroyi*, Dudgeon & Gough. Damage by *Earias* spp. in some areas has been as much as 40% of the young and mature bolls of the first crop.

Boll-worms are to a large extent responsible for the introduction of internal boll rot although sucking insects such as stainers have been responsible for some damage.

(*b*) Stainers.—It has not been possible to associate in all cases the presence of stainers in the field with the presence of internal boll rot. Four species of *Dysdercus* have been found, *D. fasciatus*, Sign., *D. nigrofasciatus*, Stal., *D. superstitiosus*, Fabr., and one species not at present identified, perhaps a variety of *D. superstitiosus*. The earlier records of *D. pretiosus*, Dist., attacking cotton must be considered to need confirmation. The two first species have been noted particularly from Buganda and Busoga, while *D. superstitiosus* and the unidentified species are more abundant in Lango; all four occur at Serere. *D. superstitiosus* has been found also on *Hibiscus esculentus*, *Abutilon indicum* and a small species of *Hibiscus* intersown among semsem in Lango. *D. fasciatus* was found on cotton seed at some ginneries in Teso and Busoga at the time when the new crop was coming into flower. It is therefore probable that the numbers of stainers can be reduced by burning or efficiently storing all cotton seed after the seed for the following crop has been

distributed. The role played by native planted *Hibiscus* will need to be investigated. Examination of Malvaceous plants has with a few exceptions not led to the finding of any appreciable number of cotton stainers during the months when the new crop is being planted. In one cotton plot *Dysdercus* spp. have been found on various weeds, apparently owing to the cotton being too dry. One was observed sucking a nymph of its own species just changing to the adult condition, a habit which occurs at times when these insects are crowded in captivity. In another instance both adults and nymphs of *D. nigrofasciatus* were found on a species of *Vernonia* at the edge of a cotton plot, and not on the neighbouring cotton plants. The number of stainers noted during 1926 has been less than in previous seasons.

In view of statements made in various parts of Africa that guinea fowl are beneficial in controlling stainers, it may be mentioned that examinations of crop contents of these birds show that their chief food is grass seeds, sweet potato and various native-grown grains or pulses; they do, however, feed on all insects occurring in the plots where they are feeding. When they are feeding in cotton plots where stainers occur all instars of these bugs may be found in their crops, and these birds may therefore be recognised as beneficial to the cotton crop at the time when stainers are feeding on the plants. I wish here to thank the Game Warden for specimens of insects taken from crop of guinea fowl. Work in the laboratory on *Dysdercus fasciatus* and *D. nigrofasciatus* has indicated that the rate of reproduction is much slower if the bugs are supplied with green bolls alone than if cotton seed is also supplied. The total length of life-history of *D. nigrofasciatus* in the laboratory when provided with both seed and bolls has been on an average 55 days. A long cotton planting season allows multiplication of pests which can attack the later sown plots; the fact that stainers will be expected to multiply more rapidly when one plot is producing seed, is an additional reason to discourage very early planting. Work in cages on a very small scale has shown that *D. nigrofasciatus* can introduce bacteria into the cotton bolls. These investigations are being continued.

4. (*a*) Insects attacking the Shoots and Leaves.—Damage to leaf buds by *Earias* spp. has been common and results in unnatural growth of the plant. More serious stunting has been observed due to the sucking of species of *Helopeltis*. The two species concerned are *Helopeltis bergrothi*, Reut. and probably *H. sanguineus*, Popp., which two species are also recorded as pests of cotton in Nigeria. These insects suck the young shoots and leaves causing brown patches along the midrib of the leaf, also brown angular patches on the lamina and lesions in the stem. The whole plant is so stunted that it is rare for any bolls to be formed; occasionally when a plant is attacked in an early stage of growth it may recover sufficiently to send out healthy shoots and to produce a small crop. These insects usually confine their attacks to a single plant, neighbouring plants in the row being quite untouched. Later they may move to a second plant. The eggs are laid in a slit in the leaf petiole. Plants attacked often seem to show more "angular leaf spot" and "black arm" than other plants and perhaps this insect may spread this bacterium from one part of the plant to another. Damage to bolls by this insect occurs in Nigeria but has as yet not been investigated in Uganda.

(*b*) There has also been some damage caused by Jassids, *Empoasca fascialis*, Jac.; another species of *Empoasca* has also been observed on cotton but never abundantly. In a few cases plots have been observed attacked both by *Jassids* and *Helopeltis*, and in such plots it is unlikely that any crop will be harvested. Very early sown cotton seems to have suffered most from *Jassids*. Other sucking insects, including a small greenish Capsid bug, have been observed on the cotton plants. This Capsid appears to suck the young leaves and shoots causing death of some buds and perhaps breaking up of the lamina of the leaves. It is possible that its attacks on very young bolls may cause shedding. Aphis has been as abundant as usual; its predators include *Parargus borbonicus*, Mcq. and *Syrphus adligatus*, Wied., the former being, however, parasitised by *Bassus laetatorius*, F. (*Ichneumonidae*), while from the latter has been bred a species of *Syrphoctonus* (*Ichneumonidae*). Aphis has been less numerous during rainy weather. The Mycologist has identified a species of *Empusa* parasitic on this Aphis but considers it of no economic importance.

(*c*) Cutworms.—Damage to seedlings by cutworms *Euxoa segetum*, Schiff, has been observed occasionally, but the only serious damage was on the Government Plantation at Kampala where 11% of the seedlings were killed. In view of the fact that seedlings are liable to this kind of damage and that there have been several cases in which the cotton seed has germinated very poorly—possibly due to insect damage either in the field or in the store—it may be found necessary to increase the seed rate.

Leaf-eating caterpillars, all negligible as pests, have included *Arctornis rubricosta*, Fawcett., *Xanthodes graelleii*, Fawcett, *Cosmophila flava*, Tams., *Nygmea* sp., the leaf roller *Sylepta derogata*, Fabr., the leaf-miner *Acrocercops bifasciata*, Wals. and an unidentified Geometrid. The leaf roller caused considerable damage on a plot planted before the normal planting season, but was not observed later; many of the larvae were parasitised by a Braconid *Apanteles xanthostigmus*, Hal.

5. Insects damaging the Roots.—Damage to the roots by *Syagrus calcaratus* has this year been negligible. Termites, *Ancistrotermes* sp., have done some damage at Serere, as has also root Aphis (*Geoica* sp.); a species of mealy-bug has also been found feeding on the roots.

6. General Remarks.—Practically all serious damage to this crop from pests and diseases is due primarily to insects, but it is not possible to form an accurate estimate of its extent. The incidence of pests have shown a marked variation in different districts and an adequate knowledge of

the causes of loss can only be obtained by a study of local soil and weather conditions and perhaps the distribution of the various malvaceous weeds. It is unfortunate that the Chemist has had no accommodation to assist in this matter and that the botanical survey was never completed. In Teso one may instance Lobori as a district showing remarkably healthy cotton, exhibiting no pests except Aphis, which appeared to be doing no damage, whereas in most other gombololas visited insects were causing damage to plants or bolls in varying degrees.

In conclusion it must be realised that losses from cotton pests must be combated mainly by plant breeding or agricultural practices; hand collecting by children should result in a considerable diminution of damage by such insects as stainers. I wish here to express my thanks to the various members of the Department who have assisted me by keeping records or sending in specimens, and particularly to the Plantation Manager at Kampala, who has shown a very keen interest in the work.

7. *Platyedra erebodoxa*, Meyr.—In view of the fact that the "pink boll-worm" has been recorded as a pest of cotton on the coastal area in Kenya it may be well to mention that the Uganda insect mentioned in my report for 1925 under the name of *Platyedra gossypiella*, Saund., and which feeds only on wild *Hibiscus* has, on the receipt of further material by Mr. Meyrick, been described by him as a distinct species under the name of *Platyedra erebodoxa*, Meyr. In view of the resemblance between this insect and cotton feeding *P. gossypiella* of Kenya, Tanganyika and Sudan, it may be well to mention that the larva of this species appears to be indistinguishable from the larva of the cotton feeding *Platyedra scutigera*, Holdaway, of Australia. It may thus be separated from *P. gossypiella* by the characters of the prolegs and of the prothoracic shield, as well as by the arrangement of the colour pattern. Mr. E. Ballard has most kindly compared my material with the Australian species and has forwarded me specimens for comparison in Uganda. It is possible that the parasites of this insect might feed on *P. gossypiella*, and therefore it may be of interest to record three parasites at present unidentified, but apparently belonging to the genera *Microbracon*, *Chelonus* and *Apanteles*. The last is unfortunately heavily parasitised, but parasites of the *Microbracon* are rare and the *Chelonus* appears to be free from attack. There are still no records of true pink boll-worm, *P. gossypiella*, from Uganda.

8. Mosquitoes.—A preliminary survey of the mosquitoes of Kampala was commenced in July, but at present it has not been possible to obtain identifications of the species collected owing to the absence from England of the specialist in that group. It was also possible to spend one day collecting mosquito larvae at Mbale. It appears, however, that *Anopheles costalis*, Lw., is the common Anopheles likely to carry malaria in Kampala, but at present there are no records from the town of *A. funestus*, Giles. Larvae of one species of *Taeniorhynchus* ("grass" mosquitoes), which obtain their air by piercing the roots of water plants with their syphon, have been obtained from a pond in which were floating a species of semi-aquatic grass and *Polygonum* sp., but so far no success has been achieved in rearing the adult for identification. Possible natural control of mosquitoes may be exercised by a species of water boatman (*Notonectidae*), which has been observed to capture and suck Culicine larvae in the laboratory. However, the most likely animal to be of practical importance is the small fish known as "nkeje," *Haplochromis* sp., probably *nubilis*, Boulonger (*Cichlidae*). This is related to the mosquito-feeding *Tilapia*, and in the laboratory will consume large numbers of Anopheline and Culicine larvae, but a few dissections have up to the present not revealed any mosquito larvae, though besides minute water plants various insect larvae, including larvae of a species of *Dixa* have been found.

I have to thank the Medical Officer of Health for sending in material and for showing me his records, and from these and my own observations it is possible to say that up to the present no *Anopheles* larvae have been found in rainwater tanks or tubs or other receptacles containing rain water. The chief breeding places of *A. costalis* appear to be pits dug for clay, both within and on the borders of the township, also some native water holes and slow moving water in nearly stagnant ditches. Temporary breeding places include puddles in swampy ground or the edges of cultivated plots. It has not been possible to make a study of the chemical composition or the micro-flora of the breeding places, but it is hoped that this may be done when laboratory accommodation is available. In some apparently suitable breeding places *A. costalis* seems to be absent, and it is only by a thorough study that the reason for this can be ascertained. It appears that the most practicable method of control of malaria in Kampala will be by mosquito eradication, probably involving further draining of at least the Nakivubo swamp and eventually the filling up of all pits and holes. Temporary measures either in the form of fish or the use of larvicides may be feasible in the latter cases. Efficiency in screening houses against mosquitoes would be increased by making the mosquito doors to open outwards and fitting them with a spring or other self-closing device. It would probably be more economical if one entomologist could be detailed for mosquito work alone, so that an adequate knowledge of the mosquitoes of the Protectorate may be obtained. It is at present impossible to continue educational work and mosquito work thoroughly, even when only part of the agricultural work has to be undertaken, and, when only one entomologist is in the Protectorate mosquito work may have to be totally neglected. In conclusion I wish to thank Mr. Norman of the British Museum (Natural History) for identifying the "nkeje," which he informs me were immature specimens and therefore his specific determination was not absolutely certain.

GEORGE L. R. HANCOCK,
Assistant Entomologist.

REPORT OF THE ACTING MYCOLOGIST

FOR THE PERIOD 10TH NOVEMBER, 1925, TO THE 30TH SEPTEMBER, 1926.

1. I took over the mycological work on the 10th November, 1925, and have been on duty during the whole period under review. I have been absent from Kampala 25 days, which included a short tour of the European plantations in Kyagwe and short visits to the Eastern Province, Bulemezi, and Mityana. In addition a number of estates have been visited from Kampala. The teaching of the agricultural student from Makerere College has occupied my attention for two afternoons per week while the terms were on. A meeting of the Plant Pests Board was attended on the 26th July, 1926, and a short report on the work done up to that date was presented.

2. *Coffee.*—There is nothing new to report with regard to coffee diseases. Very few cases of damage have been sent in, and of these the most important was the "Mealy-bug Root Disease" (*Polyporus coffeæ*, Wakf., associated with "mealy-bug" scale insects) on *Coffea robusta*. There is no doubt that diseases are still present, but the European planters are now familiar with them, and the remedial measures to be taken against them, while the adoption of the cultivation of *Coffea robusta* (which is more resistant to disease) in most of the lower lying districts, has led to less attention being paid to the disease—susceptible *Coffea arabica*. *Heterodera radicicola*, Greef, has been recently recorded on two-year-old *Coffea robusta* in Kyagwe.

3. *Para Rubber.*—No new disease of importance has been recorded for several years. *Oidium* leaf mildew continues to do some damage to the young foliage in certain localities when wet weather is prevalent at the time the leaves unfold, but so far no remedial measures have been taken against it. In January, 1926, *Cicinnobolus Cesatii*, De Bary, was found parasitic on the mycelium of the *Oidium* but it is not yet known what effect this parasite may have on the control of the mildew. "Brown Bast" is still prevalent on most estates which have been tapped over a number of years. The Keuchenius method of treating the disease has been tried on a number of estates and in some cases fairly successful results have been obtained. Most estate managers, however, find that the natives cannot be relied upon to determine the exact area affected by the disease, with the result that some of it is left outside the isolation channels and is thus able to spread unchecked. The practise most favoured is to isolate the tapping sections by deep vertical channels and when one section becomes infected with "Brown Bast" to change over to another section, either at once, or after a period of rest.

Investigations and experiments carried out with respect to "Rot of Hevea Cortex," a disease of *Hevea* tapped cortex which is very similar to that of "mouldy rot" in Malaya, have shown that the disease is primarily due to the exposure of the wood when tapping which allows a number of fungi, including *Fusaria*, *Cephalosporium* and *Sphaeronema*, to gain entrance and extend the injury caused by the original wound. This is the first record of *Sphaeronema* on *Hevea* in Uganda, but it has since been found on *Caryota urens*. It is not yet known whether the species is the same as that which is said to be the cause of "mouldy rot" in Malaya (*S. fimbriatum* (E. & H.) Sacc.). Full details of the above experiments are given in Departmental Circular No. 17.

4. *Tea.*—Two trees on the Experimental Plantation at Toro were attacked by "Brown Root Disease," (*Fomes lamaoensis*, Murr.) in April. The trees were dug up and burnt and so far no fresh outbreak has been reported. This is the first record of "Brown Root Disease" on tea in Uganda though it has been previously reported on coffee. Leaf diseases reported from Toro and Mityana have included *Cephaleuros Mycoidea*, Karst, *Colletotrichum Camelliæ*, Mass., *Pestalozzia* sp. (probably *P. Theæ*, Sawada) and a *Cercospora* sp. So far these diseases have caused little damage, and have called for no remedial measures except in one case where *Colletotrichum Camelliæ*, Mass. was accompanied by "Red Spider."

5. *Sugar Cane.*—A *Cephalosporium* sp. which is very similar to *C. Sacchari*, Butl., was found associated with a "wilt" caused by "borers." A similar disease was reported in 1922 and 1925, but so far the damage caused by the fungus does not appear to have been serious. The "Brown Leaf Spot" (*Cercospora longipes*, Butl.) was found to be causing serious damage to the young leaves of sugar-cane in Kyagwe. This is a new record for Uganda. Leaf "Mosaic" has not yet appeared in Uganda though it has been reported from Kenya Colony.

6. *Cotton.*—Our knowledge of cotton diseases has been considerably extended during the period under review. Perhaps the most important step has been the discovery and isolation of *Bacterium malvacearum*, E.F.S. The occurrence of this disease has been suspected since the end of 1924, but it was not until June, 1926, that its presence was definitely established. Since then it has been found in many parts of the Eastern and Buganda Provinces and is probably prevalent throughout the Protectorate. A full report, showing the method of isolating and establishing the identity of the *Bacterium*, etc., was written in August and is being published in Departmental Circular No. 17, but experiments in connection with the disease are still being carried out. The presence in Uganda of another important disease was confirmed in May when bolls sent in from Bukalasa for examination were found to be infected by a *Nematospora* sp. which is probably *Nematospora gossypii*, Ashby and Nowell. This disease is commonly known as "Internal Boll Disease" and was first reported in Uganda in April, 1924, by Mr. J. C. Wood, of the Empire

Cotton Growing Corporation, but no specimens were forwarded to this laboratory, and it was not reported again until the specimens above referred to were examined. A *Coniothyrium* sp. and *Bacteria* were found associated with the *Nematospora*. The conidial (*Colletotrichum*) stage of *Glomerella gossypii* (Southw.) Edg., has been found several times on bolls, and once on stems, sent in for examination.

Ramularia areola, Atk., the "grey mildew," is still very prevalent on the leaves of cotton in wet cold weather. It attacks seedlings at an early stage and checks their growth. On older plants it destroys a large part of the assimilating surface of the leaves but does not appear to have any serious effect on the vitality of the bushes. *Mycosphærella gossypina* (Cke.) Atk. has now been found in Uganda, both conidial (*Cercospora*) and perithecial stages having been observed. It is not, however, considered very serious. An *Alternaria* which is probably *A. longipedicellata* (Reichert) comb. nov., occurs frequently on leaves but probably follows other fungi. An undetermined species of *Alternaria* also occurs on cotton bolls. *Nigrospora sphaerica*, Sacc., has been frequently found on cotton seed, seedlings and leaves. *Fusaria* are frequently present on diseased stems, leaves, and bolls, but are probably only saprophytes.

A "wilt" of cotton seedlings has been investigated. Fungi found on the diseased seedlings include *Nigrospora sphaerica*, Sacc., *Rhizopus nigricans*, Ehr., *Fusaria*, *Alternaria* sp., and *Colletotrichum* sp. Eelworms (not *Heterodera radicicola*, Greef.) have been found frequently on "wilted" plants, but their connection with the disease has not yet been established. *Bacteria* are always present and *B. malvacearum* has been isolated from some of the seedlings and also from the interior of the seed; *Fusaria*, including *F. udum*, Butl., are the fungi most generally present, but attempts to reproduce the "wilt," with these organisms under laboratory conditions have not yet met with success. The experiments are still being continued. It seems probable that the *Fusaria* and *Bacteria*, are the most important factors in the "wilt," but that they are unable to cause serious injury to seedlings except when the latter are weakened in some way, probably by unfavourable soil and climatic conditions.

Several cases of unsatisfactory germination of cotton seed have been met with. One or two cases were due to unsatisfactory stores which allowed rain to enter; the wet seed then "heated" and the germ was destroyed. One cause of low germination is the introduction of fungi and bacteria by insects. A sample of seed was obtained from the Kampala store and one hundred seeds, which appeared to be sound on external examination, were cut open and twenty-two were found damaged internally to an extent which would prevent satisfactory germination. Of these twenty-two, thirteen were damaged by *Bacteria*, six by *Nematospora* sp., two by *Penicillium* sp., and one by *Fusarium* sp. This result agrees with germination tests which have been carried out, in which germination never exceeded 80% and in some cases was as low as 40% and 55%.

7. *Cereals.—Gibberella saubinetii* (Mont.) Sacc. has been found on wheat ears in North Bugishu. This is the first time it has been recorded in Uganda on this host. *Puccinia triticina* Eriks., has again been recorded on wheat in Toro, in one case being accompanied by a *Helminthosporium* sp. *Piricularia Oryzae*, Br. and Cav., has been the cause of damage to rice in Toro and a *Fusarium* sp. on rice was also recorded from the same locality. *Sorghum vulgaris* and *Sorghum barbuda* on the Experimental Plantation, Serere, were seriously damaged by a number of fungi which included *Helminthosporium turcicum*, Pass., *Puccinia purpurea*, Cke., *Phoma* sp. (probably *P. insidiosa*, F. Tass., but this has not been previously recorded in Uganda), and *Cercospora* sp. *Eleusine coracana* on the same plantation was infected with a *Helminthosporium* (*H. nodulosum* Berk. and Curt. ?) which is a new record for Uganda. *Cerebella sorghi-vulgaris*, Subram, has occurred once more, this time on *Sorghum barbuda*. It was associated with a "mildew" which has not yet been determined but is probably an *Ovulariopsis*.

8. *Sesamum indicum* L.—*Sclerotium bataticola*, Taub., was first recorded on this host in Uganda by Dr. Small in June, 1925. In December of that year the same fungus was found associated with an *Alternaria* sp. and a *Macrophoma* sp., the latter being found on one pod and this was sent to the Imperial Bureau of Mycology. Diseased stems which were placed in a moist chamber developed *Sclerotium bataticola* and a few spores of what was then thought might be a *Glæosporium* sp. These spores were isolated and sown and gave pure cultures of *Sclerotium bataticola*. The fact that this might be another form of the *Sclerotium* was recorded in my monthly report but no further material was available until August, 1926, when specimens were collected at Serere Plantation. The same month Professor Ashby, of the Imperial Bureau of Mycology, informed me that single spore cultures raised from the *Macrophoma* sp. referred to above had given *Sclerotium bataticola*. Having just secured ample material of the *Macrophoma* on *Sesamum* stems, I repeated my previous experiments and obtained similar results. There is now no doubt that the *Macrophoma*, which has since been determined as *Macrophoma corchori*, Sacc., is a sporing form of the *Sclerotium*, but further work on this subject must be left to the newly appointed Mycologist. A "mildew" (*Oidium* sp.) was causing serious damage to the leaves of the plants in the same plot in which the *Sclerotium* and *Macrophoma* were found and may possibly have weakened the plants and made them more susceptible to the attacks of the *Sclerotium*. A *Colletotrichum* sp. was found on plants in another plot on the same plantation but this was not so prevalent. A *Cercospora* sp. has been frequently found on *Sesamum* leaves but does not appear to do much damage.

9. *Miscellaneous.*—In addition to the above, *Sclerotium bataticola*, Taub., has been found associated with *Sclerotium Rolfsii*, Sacc., and *Fusarium udum*, Butl., in a "wilt" of French beans and European potatoes; and was responsible for the death of several *Tephrosia* plants used as a

green manure; it was also found on sweet potatoes imported from Burma. A form of "gummosis" on Eucalyptus trees, very similar to one formerly attributed to *Sclerotium bataticola*, was found to be primarily due to very small "boring beetles."

Fusarium udum, Butl., was the cause of a "wilt" of Podocarpus seedlings. Bean "Rust" (*Uromyces appendiculatus* (Pers.) Lk.) has caused serious damage to *Vigna* sp. ("Mpindi") and *Phaseolus radiatus* ("Mpokya") on several of the Government Experimental Plantations and in some cases was accompanied by *Ascochyta phaseolarum*, Sacc. *Rhizopus nigricans*, Ehr., *Penicillium* sp., and *Phytopthora* sp., were the cause of a rot of sweet potatoes and the same fungi were concerned in a root-rot of groundnuts. A "Rosette" disease of groundnuts was investigated. Infection experiments with injections of infusions of infected leaves and stems gave negative results, but Aphis from infected plants produced the disease on healthy ones. A case of "Bud-rot" of palms occurred on *Caryota urens* on the Government Plantation, Kampala, but the cause was not determined as at the time it was observed the central bud was in an advanced state of decay due to bacteria.

I wish to thank the Directors of the Imperial Bureau of Mycology and the Royal Botanic Gardens, Kew, for the identification of specimens, and I also wish to thank the former for the helpful notes which have accompanied the identifications.

J. D. SNOWDEN,

Acting Mycologist.

Native Agriculture—Estimate of Approximate Acreages of Crops under Cultivation.

Province and District.	Potatoes.		Millets.		Rubbers.		Cotton.	Coffee.		Plantains.	Maize.	Dhal.	Beans	Sugar Cane.	Sim-Sim.	Ground-nuts.	Cassava.	Tobacco.	Wheat.	Rice.	Chillies.	Cacao.	Peas.	Miscellaneous Crops.
	Sweet	English.	Mtama.	Wimbi.	Para.	Other.		Robusta.	Arabica.															
	ACRES.																							
BUGANDA :—																								
Mengo ..	135,000	250	1,000	1,500	100	50	103,000	250	197	400,000	500	..	10,000	2,500	3,000	4,000	7,000	500	..	70	1,000	5	230	250
Entebbe ..	24,423	705	1,081	39	10	..	25,000	*506	104	151,000	6,220	..	8,060	3,056	1,484	3,408	8,362	636	..	8	48	13	129	9
Masaka ..	24,400	50	5,000	200	30	..	20,000	639	200	60,000	1,200	..	700	100	150	2,000	1,500	..	1	..	450	..	450	300
Mubende ..	25,000	50	2,000	10,000	1	100	25,000	233	110	50,000	6,000	..	5,000	100	3,000	2,000	2,500	1,000	..	2	100	..	50	1,000
TOTAL ..	208,823	1,055	9,081	11,739	141	150	173,000	1,628	611	661,000	13,920	..	23,760	5,756	7,634	11,408	19,362	2,136	1	80	1,598	18	859	1,559
EASTERN :—																								
Busoga ..	15,000	..	4,000	7,000	..	..	88,503	..	10	50,000	500	..	500	100	300	400	3,000	50	..	50	1,000	..	..	..
Budama ..	5,000	..	6,700	38,000	..	..	35,751	..	..	20,000	1,000	100	2,400	24	1,000	2,000	3,000	5	..	10,000	20	..	..	..
Bugwere ..	2,900	..	600	25,000	..	..	53,187	..	..	1,500	1,600	20	1,900	50	1,400	1,200	3,500	10	..	2,000	50	..	10	..
Bugishu ..	4,300	100	1,100	29,000	2	..	45,907	..	573	36,000	1,300	30	1,700	70	500	500	5,700	10	80	4,800	90	..	12	600
Teso ..	30,800	..	32,000	109,000	..	..	99,329	..	..	1,300	1,000	..	20,000	..	6,500	19,000	11,000	..	..	100	..	..	..	..
Lango ..	22,000	..	43,000	103,000	..	..	61,697	..	..	500	900	..	9,900	..	20,500	8,500	4,000	..	..	160	..	..	35,000	..
Karamoja ..	10	..	4,280	700	..	..	..	..	..	..	30	..	..	..	20	10	..	..	..	..	..	..	..	..
TOTAL ..	80,010	100	91,630	311,700	2	..	384,374	..	583	109,300	6,390	150	36,400	244	30,220	31,610	30,200	75	80	17,110	1,160	..	35,022	600
NORTHERN :—																								
Bunyoro ..	12,000	30	500	8,000	..	..	13,900	14	210	5,300	500	..	7,500	10	6,000	2,000	550	150	..	3	2	..	500	..
Gulu ..	2,000	..	2,500	8,000	..	..	9,930	..	..	100	200	..	2,000	..	6,000	750	300	..	..	10	..	..	..	..
Chua ..	3,000	..	14,000	16,000	..	..	7,405	..	..	..	..	..	4,000	..	17,000	1,800	200	50	..	25	..	..	..	..
West Nile ..	30,000	2	70,000	70,000	..	..	500	..	5	50	50	..	20,000	..	20,000	1,000	1,000	..	..	..	..	..	10,000	..
TOTAL ..	47,000	32	87,000	102,000	..	..	31,735	14	215	5,450	750	..	33,500	10	49,000	5,550	2,050	200	..	38	2	..	10,500	..
WESTERN :—																								
Toro ..	20,000	100	5,000	30,000	..	..	1,535	61	50	50,000	2,500	500	20,000	400	500	2,000	1,800	150	150	300	60	..	1,000	..
Ankole ..	30,000	50	7,000	36,000	..	..	100	..	100	40,000	7,000	..	12,000	10	5	300	6,000	300	..	..	300	..	16,000	100
Kigezi ..	20,000	10	40,000	20,000	..	..	..	..	5	12,000	8,000	..	20,000	5	..	..	20	100	..	..	..	..	20,000	..
TOTAL ..	70,000	160	52,000	86,000	..	..	1,635	61	155	102,000	17,500	500	52,000	415	505	2,300	7,820	550	150	300	360	..	37,000	100
RUDOLF :—																								
Turkana Dabossa ..	..	..	..	..	..	..	..	..	..	NO BASIS FOR AN ESTIMATE.				..	..	..	..	..	..	..	..	..	..	..
GRAND TOTAL ..	405,833	1,347	239,711	511,439	143	150	590,744	1,703	1,564	877,750	38,560	650	115,660	6,425	87,359	50,868	59,432	2,961	231	17,528	3,120	18	83,381	2,259

*Including 301 acres in Sese Islands and 44 acres in Buvuma Islands.

NOTE:—The acreage under *Robusta* coffee is computed at 300 trees per acre and the acreage under *Arabica* coffee at 700 trees per acre.

Appendix No. 2.

Native Agriculture—Live Stock.

Province and District.		Cattle.	Sheep.	Goats.	Mules.	Donkeys.	Pigs.
Buganda :—	Mengo ...	48,670	18,584	156,635	—	34	25
	Entebbe ...	26,093	8,505	62,097	3	7	65
	Masaka ...	59,731	13,184	46,546	—	3	—
	Mubende ...	25,008	7,685	62,194	2	3	20
	Total ...	159,502	47,958	327,472	5	47	110
Eastern :—	Busoga ...	60,000	14,850	120,000	—	1	2
	Budama ...	60,000	?	?	—	—	—
	Bugwere ...	38,600	7,600	57,000	—	—	—
	Bugishu ...	114,800	33,400	105,000	—	—	—
	Teso	243,598	28,550	58,000	—	—	—
	Lango	168,000	45,000	75,000	—	—	—
	Karamoja ...	113,365	458,137	52,355	4	8,669	—
	Total ...	798,363	587,537	467,355	4	8,670	2
Northern :—	Bunyoro ...	5,500	5,100	22,000	—	—	—
	Gulu	40,259	15,866	31,476	2	—	—
	Chua	20,296	20,628	21,946	—	12	—
	West Nile ...	50,000	20,000	20,000	—	—	—
	Total ...	116,055	61,594	95,422	2	12	—
Western :—	Toro	57,000	29,000	54,000	—	—	—
	Ankole ...	145,000	80,000	140,000	—	10	—
	Kigezi	60,000	60,000	150,000	—	—	—
	Total ...	262,000	169,000	344,000	—	10	—
	GRAND TOTAL ...	1,335,920	866,089	1,234,249	11	8,739	112

European Agriculture.

Compiled from Returns from 164 Plantations.

Province and District.	Number of Estates.	Total acreage taken up.	Total acreage cultivated.	Total acreage not cultivated.	Acreage of Coffee (*Arabica*).		Acreage of Coffee (*Robusta*).		Acreage of Para Rubber.		Acreage of Other Rubbers.		Acreage of Cacao.		Acreage of Tea.		Sugar.	Miscellaneous Crops
					Not yet bearing.	Of bearing age.	Not yet bearing. (1)	Of bearing age.	Under 7 years. (2)	Over 7 years. (3)	Under 7 years.	Over 7 years.	Under 5 years.	Over 5 years.	Under 5 years. (4)	Over 5 years.		
	ACRES.																	
BUGANDA :—																		
Mengo	62	32,881	10,849	22,032	82	3,082	759	470	855	6,975	—	384	—	23	—	—	—	2
Entebbe ...	16	6,230	2,319	3,911	—	875	196	28	598	933	—	—	—	—	50	—	—	7
Masaka ...	17	6,334	1,410	4,924	70	957	53	6	65	347	—	—	—	—	—	—	—	20
Mubende ...	11	7,466	2,013	5,453	5	1,318	169	—	10	454	—	—	—	—	86	50	—	30
TOTAL ...	106	52,911	16,591	36,320	157	6,232	1,177	504	1,528	8,709	—	384	—	23	136	50	—	59
EASTERN :—																		
Busoga	9	10,196	1,354	8,842	—	936	50	108	10	140	—	—	—	—	—	—	210	50
NORTHERN :—																		
Bunyoro ...	21	12,805	3,353	9,452	—	2,857	26	68	45	605	—	—	—	—	—	—	—	231
WESTERN :—																		
Toro	28	14,446	2,416	12,030	234	2,171	—	—	—	—	—	—	—	—	—	2	—	9
GRAND TOTAL ...	164	90,358	23,714	66,644	391	12,196	1,253	680	1,583	9,454	—	384	—	23	136	52	210	349

(1) 259 acres interplanted with *C. arabica.*
(2) 627 „ „ „ „ and 22 with *C. robusta.*
(3) 1,842 „ „ „ „ and 244 „ „
(4) 3 „ „ „ „

Indian Agriculture.

Compiled from Returns from 28 Plantations.

Province and District.	Number of Estates.	Total acreage taken up.	Total acreage cultivated.	Total acreage not cultivated.	Acreage of Coffee (*Arabica*).		Acreage of Coffee (*Robusta*).		Acreage of Para Rubber.		Acreage of Cacao.		Cotton.	Maize.	Sugar.		Miscellaneous Crops. (2)
					Not yet bearing.	Of bearing age.	Not yet bearing.	Of bearing age.	Under 7 years.	Over 7 years (1)	Under 5 years.	Over 5 years.			Plant Canes.	Ratoon Canes.	
	ACRES.																
Buganda :—																	
Mengo	11	7,882	4,158	3,724	—	85	—	400	40	630	—	—	—	—	1,136	1,960	—
Entebbe	3	870	193	677	33	—	—	—	—	75	—	—	—	—	60	—	25
Masaka	2	1,604	396	1,208	20	65	15	—	—	170	—	20	75	3	67	—	16
Mubende	2	849	550	299	—	330	70	—	—	—	—	—	—	—	150	—	—
Total ...	18	11,205	5,297	5,908	53	480	85	400	40	875	—	20	75	3	1,413	1,960	41
Eastern :—																	
Busoga	7	5,785	1,130	4,655	—	175	20	45	—	800	—	—	—	—	90	—	30
Western :—																	
Toro	2	583	63	520	38	25	—	—	—	—	—	—	—	—	—	—	—
Northern :—																	
Bunyoro	1	100	—	100	—	—	—	—	—	—	—	—	—	—	—	—	—
Grand Total ...	28	17,673	6,490	11,183	91	680	105	445	40	1,675	—	20	75	3	1,503	1,960	71

(1) 148 acres interplanted with *C. arabica*.
(2) 30 „ „ „ „

Appendix No. 5.

Live-Stock on European and Indian Plantations.

Province and District.		Cattle.	Mules.	Donkeys.	Sheep.	Goats.	Pigs.
BUGANDA—Mengo	(i)	341	8	5	2	2	—
	(ii)	12	2	—	—	—	—
Entebbe	(i)	112	—	—	—	—	—
	(ii)	8	—	—	—	—	—
Masaka	(i)	152	—	—	—	—	—
	(ii)	17	—	3	—	10	—
Mubende	(i)	529	—	—	50	20	—
TOTAL	(i)	1,134	8	5	52	22	—
	(ii)	37	2	3	—	10	—
EASTERN —Busoga	(i)	55	—	3	100	100	—
NORTHERN—Bunyoro	(i)	84	3	1	1	2	—
WESTERN—Toro	(i)	441	1	8	7	63	19
	(ii)	12	—	—	—	—	—
GRAND TOTAL	(i)	1,714	12	17	160	187	19
	(ii)	49	2	3	—	10	—
		1,763	14	20	160	197	19

(i) European. (ii) Indian.

Appendix No. 6.

Comparative Statement of Uganda Produce Exported from Mombasa for the year ended 31st December, 1926.

Articles.	Unit.	From 1st January to 31st December, 1926.		From 1st January to 31st December, 1925.		Increase.		Decrease.	
		Quantity	£	Quantity	£	Quantity	£	Quantity	£
Cotton, Raw	centals	723,438	3,051,791	784,152	4,685,992	...	...	60,714	1,634,201
„ Seed	tons	35,360	194,887	21,928	122,790	13,432	72,097	...	...
Coffee, Raw	cwts.	33,211	147,884	29,883	139,469	3,328	8,415	...	...
Rubber, Plantation	centals	13,561	135,619	8,058	68,704	5,503	66,915	...	...
Chillies	cwts.	1,245	1,715	2,257	2,935	...	...	1,012	1,220
Jaggery (Unrefined Sugar)	„	272	215	338	245	...	...	66	30
Sugar, Refined	„	1,255	1,599	4,053	7,447	...	...	2,798	5,848
Groundnuts	tons	380	6,026	41	820	339	5,206	...	...
Cacao	cwts.	10	18	115	311	...	...	105	293
Sim-sim	tons	194	4,130	214	4,523	...	...	20	393
Skins, Sheep and Goat	No.	88,750	5,173	55,350	4,014	33,400	1,159	...	...
Hides, Dry and Dry Salted	cwts.	7,640	27,357	7,027	29,843	613	...	...	2,486
Hippo Teeth	„	10	86	1	9	9	77	...	...
Horns	„	4	346	1	86	3	260	...	...
Ivory	„	202	18,289	307	28,535	...	...	105	10,246
Timber	cub. ft.	5,144	1,703	359	75	4,785	1,628	...	...
Miscellaneous Produce	value.	...	340	...	521	...	...	...	181
Goods, Manufactured, unenumerated	„	...	177	...	53	...	124	...	...
Goods, Unmanufactured, „	„	...	82	...	345	...	...	...	263
TOTALS		...	3,597,437	...	5,096,717	...	155,881	...	1,655,161

Net decrease:—£1,499,280.

Comparative Statement of Exports from the Uganda Protectorate.

Articles.	Unit.	Year ended 31st Dec., 1922.		Year ended 31st Dec., 1923.		Year ended 31st Dec., 1924.		Year ended 31st Dec., 1925.		Year ended 31st December, 1926.	
		Quantity	£	Quantity	£	Quantity	£	Quantity	£	Quantity	£
Cotton, Raw	centals	193,159	877,625	352,184	2,026,820	514,418	3,486,565	784,152	4,685,992	723,438	3,051,791
Cotton, Seed	tons	2,124	9,532	9,794	52,964	21,093	106,280	21,928	122,790	35,360	194,887
Coffee, Raw	cwts.	51,262	99,227	40,931	108,490	41,093	167,696	29,883	139,469	33,211	147,884
Rubber, Plantation ...	centals	1,249	3,741	3,986	9,926	6,083	18,911	8,058	68,704	13,561	135,619
Chillies	cwts.	11,935	52,768	18,223	58,660	21,357	35,499	2,257	2,935	1,245	1,715
Ghee (Clarified Butter) ...	,,	909	4,329	128	365	3	9	...	...	...	...
Jaggery (Unrefined Sugar)...	,,	2,398	3,742	1,127	921	48	33	338	245	272	215
Sugar, Refined ...	,,	...	...	...	...	319	698	4,053	7,447	1,255	1,599
Groundnuts	tons	507	9,236	175	2,714	89	1,446	41	820	380	6,026
Cocoa	cwts.	565	2,370	399	1,079	118	499	115	311	10	18
Sim-sim	tons	2,796	47,100	1,435	24,383	740	15,602	214	4,523	194	4,130
Sim-sim Oil	gals.	57*	162	16	4	...	...	...	...	...	..
Castor Seed	tons	28	574	10	114	...	...	...	...	...	...
Skins, Sheep and Goat ...	No.	2,832*	18,680	314,914	14,839	274,915	14,175	55,350	4,014	88,750	5,173
Skins, Miscellaneous ...	,,	...	43	16	32	55	26	...	...	...	...
Hides, Dry and Dry Salted	cwts.	5,397	11,197	10,423	28,855	7,172	24,347	7,027	29,843	7,640	27,357
Hippo Teeth	,,	138	1,534	101	1,271	30	732	1	9	10	86
Horns	,,	9	626	15	1,033	3	224	1	86	4	346
Ivory	,,	1,222	68,419	807	58,673	269	22,909	307	28,535	202	18,289
Timber	C. ft.	...	35	50,194	541	2,151	323	359	75	5,144	1,703
Miscellaneous Produce ...	Value	...	4,470	...	1,710	...	795	...	521	...	340
Goods, Manufactured, unenumerated	,,	...	313	...	161	...	274	...	53	...	177
Goods, Unmanufactured, unenumerated	,,	...	70	...	123	...	352	...	345	...	82
Totals ...	...	...	1,215,793	...	2,393,678	...	3,897,395	...	5,096,717	...	3,597,437

* Cwts.

Note:—Export figures as from 1st January, 1924, represent actual shipments from Mombasa, whereas all figures prior to that date represent exports from Uganda ports.

Appendix No. 8.

Details of Machinery in use at Licensed Ginneries in the Uganda Protectorate—Season 1926.

Province and District.	Ginneries.	Gins.		Seed Openers.	Presses.		Engines.			Delinters.
		Roller.	Saw.		Hand	Power.	Steam.	Oil.	Suction Gas.	
Eastern:—										
Busoga	34 (1)	391	14	31	24	13	28	6	1	1
Budama ...	7	34	23	3	6	4	3	2	2	—
Bugwere ...	13	100	21	10	13	7	8	2	3	—
Bugishu ...	4	50	2	4	5	2	3	—	1	—
Teso	25	227	18	21	15	15	11	2	12	—
Lango	16	121	17	12	10	11	12	1	3	—
Total ...	99	923	95	81	73	52	65	13	22	1
Buganda:—										
Mengo	39 (2)	428	3	39	19	17	26	4	10	2
Entebbe	7 (3)	61	—	7	3	4	7	—	—	—
Masaka	9	91	2	8	2	6	9	—	—	—
Mubende ...	10	77	3	9	10	—	9	1	—	—
Total ..	65	657	8	63	34	27	51	5	10	2
Northern:—										
Bunyoro	4	32	2	3	3	2	4	—	—	—
Gulu	4	42	—	4	3	2	4	—	—	—
Chua	1	10	—	1	1	—	1	—	—	—
West Nile ...	1	—	2	—	—	1	1	—	—	—
Total ...	10	84	4	8	7	5	10	—	—	—
Western:—										
Toro	1	6	—	1	—	—	1	—	—	—
Ankole	1	—	2	—	—	—	1	—	—	—
Total ..	2	6	2	1	—	—	2	—	—	—
Grand Total ...	176	1,670	109	153	114	84	128	18	32	3

(1) Excluding one ginnery licensed but incomplete.
(2) ,, ,, ,, ,, ,, and two Press Houses.
(3) ,, two ginneries ,, ,, ,,

ENTEBBE Meteorological Statement for the Year 1926.

Month.	7 A.M.			2 P.M.			9 P.M.							
	Barometer corrected and reduced to 32° F.	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32° F.	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32° F.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Sunshine.	Rainfall.	No. of days Rain fell.
	Ins.	°	°	Ins.	°	°	Ins.	°	°	°	°	Hrs	Ins.	
January	26·218	69·4	66·5	26·140	78·0	69·5	26·165	67·4	66·5	80·5	60·2	6·3	5·20	13
February	·220	69·2	66·7	·149	77·6	69·9	·163	70·3	67·4	80·4	64·1	6·0	6·65	12
March	·216	70·2	66·6	·149	78·2	70·9	·163	72·1	67·8	80·0	65·3	6·5	6·89	23
April	·223	69·4	67·1	·172	76·2	70·2	·206	68·4	66·5	78·4	64·3	5·2	17·54	25
May	·250	70·1	67·3	·168	76·6	70·1	·209	68·8	66·4	77·7	63·7	5·1	6·62	19
June	·251	68·9	66·6	·210	76·5	69·6	·223	67·5	65·4	78·2	63·7	5·3	4·46	18
July	·217	68·5	66·3	·212	75·7	72·9	·202	71·0	68·1	79·8	61·6	5·4	6·75	10
August	·244	69·1	65·7	·220	75·1	70·1	·213	68·9	65·2	77·7	62·1	5·7	3·86	9
September	·196	65·6	63·6	·164	74·8	63·0	·191	66·8	64·4	78·4	61·9	4·8	3·80	12
October	·162	66·0	64·2	·128	75·5	68·4	·149	67·0	66·3	80·5	63·3	5·9	7·25	15
November	·162	66·8	64·5	·121	77·7	71·3	·141	67·3	64·7	80·9	63·4	6·4	4·64	14
December	·149	67·6	65·4	·123	77·1	70·7	·136	67·1	64·4	81·0	64·0	5·2	1·62	6
Mean for the Year	·217	67·6	69·2	·163	76·6	69·7	·180	68·3	66·0	82·8	63·1	5·6	Totals 75·28	176

Statement of Extra Meteorological Observations taken at ENTEBBE during the year 1926.

MONTH.	Solar Thermometers.			Earth Thermometers.		Wind Velocity—Miles per Hours.			Evaporation
	Black Bulb.	Bright Bulb. 2 P.M.	Terrestrial Thermometers Minimum. 7 A.M.	1½ feet. 7 A.M.	4 feet. 7 A.M.	9 P.M. TO 7 A.M.	7 A.M. TO 2 P.M.	2 P.M. TO 9 P.M.	
	°	°	°	°	°				m.m.
JANUARY	136·8	99·5	50·7	74·5		3·8	5·8	2·8	2·92
FEBRUARY	139·7	97·4	57·5	75·5		1·7	4·6	3·3	2·92
MARCH	136·2	101·2	54·2	70·2		2·3	5·2	2·9	3·01
APRIL	135·6	99·0	57·5	74·5	No Records	2·1	4·2	3·5	2·18
MAY	134·5	98·8	No Records	73·4		2·0	4·2	3·9	3·12
JUNE	135·5	98·7	56·2	73·6	70·6	1·5	4·2	2·7	2·08
JULY	132·6	93·1	56·3	73·6	74·6	2·0	3·4	3·0	2·25
AUGUST	134·7	94·2	57·0	73·4	73·9	2·5	4·1	3·3	2·92
SEPTEMBER	132·4	98·4	59·8	74·7	74·8	3·3	4·9	4·4	2·58
OCTOBER	135·9	99·3	59·0	76·3	75·1	2·9	4·3	3·2	2·24
NOVEMBER	138·4	100·5	60·7	76·8	75·6	2·6	5·3	3·2	2·79
DECEMBER	138·0	100·7	60·7	77·2	76·7	3·2	4·9	3·7	2·98
MEAN FOR THE YEAR	135·8	98·4	57·2	74·5	74·4	2·5	4·6	3·3	2·61

JINJA Meteorological Statement for the Year 1926.

Month.	7 A.M.			2 P.M.			9 P.M.							
	Barometer corrected and reduced to 32°F.	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32°F.	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32°F.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days Rain fell.	Evaporation.
	Ins.	o	o	Ins.	o	o	Ins.	o	o	o	o	Ins.		m.ms.
January	26·135	68·1	64·5	26·085	73·2	69·9	26·126	68·8	65·7	85·7	53·6	1·03	8	3·14
February	·138	69·1	66·9	·085	74·8	70·8	·126	69·2	67·6	86·0	53·4	6·12	11	3·07
March	·137	68·5	64·1	·078	76·3	69·3	·133	69·0	66·1	87·9	54·2	5·52	17	3·00
April	·137	68·5	65·0	·097	73·2	70·1	·132	68·9	65·6	84·7	53·0	10·16	19	2·67
May	·135	68·0	64·5	·082	74·1	71·3	·139	69·0	65·1	86·9	54·9	4·41	20	3·00
June	·131	70·0	63·1	·083	77·3	72·0	·131	70·0	68·3	88·4	61·7	1·87	10	3·13
July	·131	70·2	69·0	·095	75·3	71·8	·127	70·7	69·2	84·3	60·8	·88	7	2·95
August	·232	70·3	68·8	·220	76·1	72·1	·232	70·1	68·8	84·9	61·6	3·84	9	3·02
September	No Records	—	—	—	—	—	—	—	—	—	—	5·18	18	—
October	No Records	—	—	—	—	—	—	—	—	—	—	4·52	14	—
November	No Records	—	—	—	—	—	—	—	—	—	—	5·96	18	—
December	No Records	—	—	—	—	—	—	—	—	—	—	1·20	2	—
Mean for Year ...	26·147	69·1	65·7	26·103	75·0	70·9	26·143	69·5	67·0	86·1	56·6	Totals 50·99	153	3·00

BUKALASA.

	7 A.M.		2 P.M.		9 P.M.						
	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum	Minimum	Rainfall	No. of Days Rain fell	Sunshine
	o	o	o	o	o	o	o	o	Hrs.		Hrs.
JANUARY ..	..	...	...	...	...	..	89·0	63·6	1·03	5	...
FEBRUARY ...	...	...	...	...	...	...	87·9	65·4	2·49	8	...
MARCH ...	...	...	...	...	..	...	86·3	65·4	4·02	15	...
APRIL	...	...	...	...	...	...	82·5	64·6	8·68	16	...
MAY	...	...	...	...	. .	...	82·4	54·2	3·20	13	...
JUNE	66·5	64·6	76·0	67·1	67·2	64·7	80.3	61·8	8·74	18	..
JULY	64·4	62·6	71·0	64·0	68·9	65·5	78·4	60·7	4·65	18	2·9
AUGUST ...	65·2	63·2	77·2	68·0	70·4	64·9	81·3	61·2	1·46	16	4·5
SEPTEMBER ...	63·7	62·3	77·8	67·9	68·2	65·9	81·3	60·0	7·23	20	4·4
OCTOBER ...	63·8	62·1	79·4	68·5	68·8	64·7	82·8	61·4	9·52	19	5·8
NOVEMBER ...	64·9	63·0	79·3	69·0	68·3	66·5	82·4	62·3	5·62	20	4·7
DECEMBER ...	64·2	61·9	81·1	68·0	68·1	66·2	85·3	63·0	1·27	9	6·3
									TOTALS		
MEAN FOR THE YEAR ...	64·7	62·8	77·4	67·5	68·6	65·4	83·3	62·6	57·78	177	4·8

STATEMENT OF EXTRA METEOROLOGICAL OBSERVATIONS TAKEN AT BUKALASA DURING THE YEAR 1926.

	Solar Thermometers.		7 A.M.
	Black Bulb.	Bright Bulb.	Evaporation.
	o	o	m. m.
JANUARY	...	...	...
FEBRUARY	...	...	...
MARCH	...	...	...
APRIL	...	...	..
MAY	...	...	...
JUNE	142·3	122·3	4·07
JULY	137·0	116·6	3·32
AUGUST	144·0	119·6	4·14
SEPTEMBER	147·6	123·0	4·10
OCTOBER	149·2	121·4	4·57
NOVEMBER	148·7	122·7	4·05
DECEMBER	145·1	120·1	5·20
	144·8	120·8	4·20

July sunshine 20 days only, and August Dry and Wet Bulb of 7 a.m. and 2 p.m. 27 days only.

MBALE.

MONTH.	7 A.M.		2 P.M.					
	Dry Bulb	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days rain fell.
	°	°	°	°	°	°	Ins.	
JANUARY	65·2	61·7	82·6	68·1	86·1	62·6	1·74	3
FEBRUARY ...	66·4	62·8	82·7	69·1	87·1	64·0	3·55	12
MARCH	65·8	63·8	...	70·3	85·8	...	2·36	11
APRIL	66·9	64·9	75·7	68·5	83·0	65·1	6·86	14
MAY	67·6	65·5	76·8	70·1	83·0	64·3	6·05	15
JUNE	67·1	65·0	75·8	68·9	81·5	63·5	4·04	11
JULY	64·5	63·0	73·1	66·7	79·8	61·7	6·59	13
AUGUST	64·7	62·5	76·0	68·6	80·7	60·7	3·53	8
SEPTEMBER ...	64·8	62·5	75·8	68·3	81·1	60·4	5·85	14
OCTOBER	66·2	64·5	76·5	69·5	82·5	64·8	3·56	10
NOVEMBER ...	66·2	63·9	78·8	69·9	81·5	61·3	2·67	16
DECEMBER ...	66·4	63·5	81·4	67·4	85·0	61·9	1·69	4
MEAN FOR YEAR	66·0	63·6	71·3	68·8	83·1	62·7	TOTALS 48.49	131

FORT PORTAL.

MONTH.	7 A.M.		2 P.M.							Earth Thermometers.	
	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall	No. of days rain fell.	Sunshine	1½ ft.	4 ft.
	o	o	o	o	o	o	Ins.		Hrs.	o	o
JANUARY ...	58·7	57·2	75·5	67·7	78·8	57·4	0·57	4	5·5	65·5	71·7
FEBRUARY	60·1	58·4	75·7	67·9	81·0	58·8	2·48	7	4·3	67·4	72·9
MARCH ...	61·2	59·8	77·0	68·6	81·1	60·0	3·17	8	4·4	67·9	73·4
APRIL ...	62·7	61·1	73·7	66·8	78·7	60·5	9·52	14	4·5	66·6	71·1
MAY ...	61·9	59·8	74·6	67·9	77·1	59·4	3·44	9	3·4	66·9	72·2
JUNE ...	60·1	58·4	73·9	65·8	76·7	57·5	3·19	7	5·2	66·6	72·2
JULY ...	60·2	58·3	72·4	64·7	75·5	55·0	4·50	8	4·0	66·0	69·8
AUGUST ...	60·1	58·8	72·1	65·6	76·1	58·5	3·79	11	3·4	66·0	70·0
SEPTEMBER	59·7	58·1	71·9	65·5	76·1	57·7	5·92	12	7·2	65·1	70·4
OCTOBER ...	61·2	59·8	67·7	66·1	76·2	59·0	14·59	17	3·5	66·2	71·0
NOVEMBER	61·5	59·6	73·4	65·5	75·2	59·2	6·23	13	3·3	66·5	71·0
DECEMBER	60·1	58·6	75·1	67·9	78·1	58·1	0·70	3	5·0	66·7	75·0
MEAN FOR YEAR.	61·3	58·1	73·6	65·8	76·7	58·4	TOTALS 58·10	133	4·5	66·4	72·5

KAMPALA.

MONTH.	7 A.M.		2 P.M.							
	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days rain fell.	Black Bulb.	Bright Bulb.
	o	o	o	o	o	o	In.		o	o
JANUARY ...	65·4	63·5	78·1	68·0	82·2	62·1	1·45	9	149·3	107·3
FEBRUARY	66·4	64·2	79·3	70·3	81·8	61·6	4·04	14	150·4	109·7
MARCH ...	66·3	64·1	78·8	70·2	81·4	65·1	6·56	30	153·3	109·5
APRIL ...	65·7	64·4	76·0	69·3	79·3	64·2	14·09	27	148·9	106·3
MAY ...	65·8	64·5	76·2	69·4	79·2	64·7	4·59	23	144·8	101·8
JUNE ...	65·5	64·2	77·5	68·9	80·2	64·2	1·29	16	145·8	105·4
JULY ...	65·3	63·0	76·2	67·9	78·6	62·6	5·82	20	No Records	
AUGUST ...	63·8	62·2	76·4	67·7	80·2	64·7	3·01	21	130·1	103·0
SEPTEMBER	63·6	62·7	77·3	68·2	81·3	62·7	3·05	20	149·2	105·8
OCTOBER ...	66·7	64·8	76·4	68·4	81·8	62·3	5·25	24	149·6	108·9
NOVEMBER	66·5	64·6	77·8	69·1	81·5	61·5	7·47	16	151·5	109·4
DECEMBER	64·1	62·9	80·4	70·8	82·6	59·9	2·10	9	148·8	109·7
MEAN FOR YEAR	65·4	63·7	77·5	68·0	80·8	62·9	TOTALS 58·72	229	147·4	106·9

Appendix No. 9—*continued.*

MUBENDE.

Month.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	9 P.M. Dry Bulb.	9 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days rain fell.
	o	o	o	o	o	o	o	o	In.	
January ...	64·3	60·7	70·4	67·9	67·9	63·1	82·2	57·8	·45	4
February ...	63·0	60·3	77·9	67·8	66·4	61·7	81·1	54·0	3·30	10
March ...	64·0	61·2	76·4	64·2	69·1	64·6	78·9	58·0	5·05	15
April ...	63·0	60·8	77·2	68·2	67·7	64·9	79·6	54·6	5·21	17
May ...	63·6	61·5	76·3	67·7	67·6	65·4	78·1	53·9	4·55	10
June ...	63·0	60·8	78·2	68·3	68·1	65·9	79·9	53·8	2·46	5
July ...	61·6	59·5	73·9	65·7	65·5	63·5	76·2	53·7	2·54	6
August ...	62·1	59·5	73·8	65·6	65·0	62·6	76·3	53·2	5·81	14
September...	62·9	60·5	74·3	64·8	65·5	63·0	76·8	53·3	3·98	14
October ...	64·2	62·0	74·6	66·9	65·7	64·1	77·1	53·9	7·90	14
November ...	62·8	60·7	75·0	67·3	65·8	64·0	77·1	53·6	6·83	18
December ...	63·9	61·8	78·2	66·9	65·7	64·1	80·0	55·6	·63	5
Mean for Year ...	63·2	60·8	75·5	66·8	65·8	63·9	79·6	54·4	Totals 48·71	132

MASAKA.

Month.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	9 P.M. Dry Bulb.	9 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall	No. of days rain fell.
	o	o	o	o	o	o	o	o	In.	
January ...	65·9	64·0	77·1	72·1	70·4	67·3	80·7	60·6	4·37	8
February ...	66·1	64·4	76·6	72·2	70·0	67·7	80·5	59·6	4·34	10
March ...	65·8	64·2	77·7	73·5	70·0	67·6	80·0	60·5	7·29	18
April ...	65·6	64·2	76·3	71·8	69·8	67·3	78·4	58·5	10·98	19
May ...	65·1	63·7	75·1	69·7	68·5	65·9	77·0	57·9	4·92	17
June ...	64·9	62·6	75·5	68·7	68·3	65·6	77·3	55·1	1·06	3
July ...	64·5	62·1	74·7	67·5	67·7	64·6	76·0	58·0	4·24	8
August ...	64·6	62·5	75·7	68·2	68·2	65·2	77·3	59·3	·65	4
September ...	64·9	63·1	74·3	68·3	65·7	64·9	77·5	58·9	5·16	13
October ...	66·0	64·5	77·3	69·7	69·4	66·2	79·5	61·0	5·09	9
November ...	66·6	64·2	78·9	70·3	69·9	66·8	80·8	62·3	6·83	11
December ...	66·9	64·4	79·3	71·8	70·2	66·9	81·7	63·0	0·76	5
Mean for Year ...	65·6	63·6	76·5	70·3	69·0	66·3	78·9	59·5	Totals 55·69	125

MBARARA.

Month.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days rain fell.
	o	o	o	o	o	o	In.	
January	65·6	64·1	79·2	74·6	81·6	46·5	2·50	8
February	66·5	64·5	79·9	75·6	83·0	49·6	2·44	7
March	64·3	63·0	78·1	73·7	81·7	52·4	6·27	15
April	65·4	63·5	76·7	73·3	81·5	54·0	5·92	12
May	66·1	63·3	77·8	73·5	80·9	54·7	4·67	13
June	65·8	61·8	79·3	73·4	81·1	54·6	0·73	4
July	65·0	61·8	77·5	72·6	80·2	55·9	2·94	9
August	66·4	62·8	79·4	73·0	81·8	57·1	0·72	4
September	66·4	63·5	75·4	70·3	80·8	58·1	9·57	15
October	66·1	63·7	79·4	72·7	81·6	55·1	4·08	9
November	66·6	63·3	79·9	71·4	81·9	56·3	8·40	8
December	66·9	63·8	75·9	71·4	81·5	57·0	1·70	4
Mean for Year ...	65·9	63·3	78·2	72·9	81·5	54·3	Totals 49·94	108

NGETTA.

	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum.	Minimum.	Rainfall.	No of Days Rain fell
	o	o	o	o	o	o	Ins.	o
JANUARY ...	...	...	...	...	...	...	...	...
FEBRUARY ...	70·2	65·6	88·0	68·6	91·8	65·5	2·86	7
MARCH ...	71·1	67·6	90·9	70·0	91·6	65·7	2·07	11
APRIL ...	69·1	67·3	79·7	71·1	84·1	66·3	7·96	20
MAY ...	67·6	66·3	81·1	71·5	84·4	65·1	10·35	18
JUNE ...	66·9	65·0	81·5	70·4	84·6	63·3	6·14	19
JULY ...	65·5	63·1	78·6	70·4	81·1	62·9	6·44	22
AUGUST ...	65·0	63·9	81·2	75·1	83·6	62·6	9·63	20
SEPTEMBER ...	64·2	63·4	81·8	76·1	83·9	62·5	10·84	20
OCTOBER ...	64·7	63·8	85.5	78·3	89·3	—	2·96	13
NOVEMBER ...	64·3	62·8	84·2	77·4	86·6	—	4·20	21
DECEMBER ...	62·7	61·1	91·4	83·4	92·9	60·8	Nil	—
MEAN FOR THE YEAR ...	66·5	64·1	83·7	73·8	86·7	63·8	TOTALS 63·45	171

GULU.

	7 A.M.		2 P.M.					
MONTH.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temp.	Minimum Temp.	Rainfall.	Number of days rain fell.
	o	o	o	o	o	o	Ins.	
JANUARY ...	76·9	65·7	84·6	67·2	87·6	63·7	...	...
FEBRUARY ...	77·9	68·6	84·5	72·0	88·0	61·3	2·19	9
MARCH ...	76·8	67·1	85·3	73·4	87·9	55·1	3·06	10
APRIL ...	73·6	69·1	78·2	75·2	83·1	54·0	6·18	15
MAY ...	73·2	69·8	80·0	76·6	82·1	54·6	8·11	13
JUNE ...	73·3	69·6	78·9	76·6	80·2	54·1	7·15	13
JULY ...	Thermometer unreliable						8·90	13
AUGUST ...	71·5	67·8	78·4	71·9	82·0	54·5	10·21	14
SEPTEMBER ...	70·1	66·6	77·9	69·3	82·9	62·8	6·44	13
OCTOBER ...	73·2	68·2	82·1	71·5	85·3	64·5	6·48	15
NOVEMBER ...	72·2	67·6	80·5	74·3	84·6	63·8	4·37	13
DECEMBER ...	73·4	65·0	85·2	67·6	87·9	63·8	·26	2
MEAN FOR YEAR ...	73·8	67·7	81·4	72·3	84·7	59·3	TOTALS 63·35	130

SERERE.

MONTH.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temp.	Minimum Temp.	Rainfall.	No. of Days Rain fell.
	o	o	o	o	o	o	Ins.	
JANUARY ...	No records available				85·3	65·0	2·91	5
FEBRUARY ...	68·2	65·7	...	...	87·4	66·7	2·59	7
MARCH ...	68·2	66·1	85·1	72·1	87·0	66·1	3·96	15
APRIL ...	67·1	63·6	80·3	72·2	81·3	65·6	13·29	22
MAY ...	68·7	67·1	80·3	72·5	...	65·3	4·35	17
JUNE ...	67·8	65·8	81·2	71·8	82·5	64·5	4·66	12
JULY ...	65·6	64·4	77·2	72·3	79·3	64·2	3·90	17
AUGUST ...	65·9	64·2	80·8	70·5	85·6	63·8	8·10	18
SEPTEMBER ...	66·0	64·4	80·7	69·9	82·6	62·4	8·92	15
OCTOBER ...	67·2	65·0	83·2	69·7	84·9	63·3	7·22	13
NOVEMBER ...	65·9	64·1	81·9	69·6	83·9	62·8	9·61	16
DECEMBER ...	66·0	60·8	87·3	66·5	88·6	62·5	...	...
MEAN FOR YEAR ...	67·0	64·6	82·8	70·7	84·4	64·3	TOTALS 69·51	157

May, Maximum out of order ; and June, Maximum 12 days only.

Appendix No. 9—*continued.*

KAMULI.

Month.	Maximum.	Minimum.	Rainfall.	No. of days rain fell.
	o	o	Ins.	
January ...	...	...	...	...
February ...	...	..	...	...
March ...	...	...	...	...
April ...	...	...	...	...
May ...	...	...	5·37	21
June ...	..	...	4·63	16
July ...	...	...	5·28	12
August ...	80·8	65·3	2·79	13
September ...	79·8	64·7	8·95	16
October ...	81·1	66·4	4·90	16
November ...	84·4	66·3	5·10	16
December ...	90·0	64·8	1·52	2
Mean for Year ...	81·2	65·5	Totals 38·90	112

DWOLI.

Month.	Dry Bulb.	Wet Bulb	Maximum.	Minimum.	Rainfall.	No. of days rain fell.
	o	o	o	o	Ins.	
Jan.	72·4	67.1	81·2	72·3	0·46	5
Feb.	72·1	67.5	80·3	71·3	4·09	15
March	72·8	67·4	81·8	71·9	1·98	11
April	70·8	66·9	78·6	69·3	10·42	17
May	70·7	66·4	78·6	69·7	9·27	19
June	70·0	66·3	79·2	69·3	5·70	8
July	68·8	65·3	75·2	71·5	4·36	15
Aug.	68·7	66·0	76·2	67·9	6·35	10
Sep.	68·2	65·8	75·8	67·8	6·81	18
Oct	69·1	66·1	76·2	68·2	9·02	17
Nov.	69·3	66·7	76·0	68·7	6·02	17
Dec.	71·3	66·2	80·1	71·2	1·65	3
Mean for Year	70·4	66·5	78·3	69·9	Totals 66·13	155

MASINDI.

Month.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days of rain.	Sunshine.
	o	o	Ins.		Hrs.
January ...	88·6	62·6	0·58	2	9·1
February	90·7	64·3	24·2	6	7·5
March ...	91·1	65·2	1·34	9	8·0
April ...	90·4	64·4	4·68	10	5·6
May ...	87·6	63·7	3·74	12	7·1
June ...	88·2	63·3	2·53	7	7·2
July ...	83·7	62·1	6·08	9	5·3
August ...	84·2	61·8	4·61	9	6·3
September	84·0	61·3	5·65	17	5·3
October ...	84·4	61·6	3·30	14	6·5
November	84·0	61·0	4·94	17	3·5
December	85·7	61·2	0·16	2	5·6
Mean for Year ...	86·9	63·0	Totals 40·03	114	6·4

SIMSA.

Month.	Maximum Temperature.	Minimum Temperature.	Rainfall.	Number of days rain fell
	o	o	Ins.	
January...	93·7	64·0	1·73	8
February	94·3	64·8	3·98	4
March ...	92·8	65·1	3·78	19
April ...	Out of	order	9·85	18
May ...	83·2	—	6·48	15
June ...	84.3	—	4·89	13
July ...	Out of	order	7·16	12
August ...	85·3	65·2	7·31	18
September	85·6	63·7	10·68	15
October ...	89·6	65·4	2·60	8
November	89·9	64·5	8·03	12
December	95·3	62·8	Nil	—
Mean for Year ...	89·4	65·9	Totals 66·49	132

January, Maximum 25 days only.

ARUA.

Month.	Maximum Temperature.	Minimum Temperature.	Rainfall.	Number of days rain fell
	o	o	Ins.	
January ...	86·2	63·6	0·04	2
February	86·0	67·2	2·68	5
March ...	84·7	65·4	2·08	8
April ...	82·2	64·7	5·05	9
May ...	81·0	64·2	5·91	8
June ...	80·9	62·9	4·64	9
July ...	76·4	61·3	6·17	10
August ...	77·2	61·9	5·86	10
September	79·6	60·6	4·74	10
October ...	79·6	60·7	7·73	10
November	80·3	62·3	5·49	9
December	83·9	63·8	Nil	—
Mean for Year ...	81·5	63·2	Totals 50·39	90

NAGICHOT.

Month.	Maximum Temperature.	Minimum Temperature.	Rainfall.	Number of days rain fell
	o	o	Ins.	
January ...	75·7	57·5	0·40	5
February	75·0	58·5	0·56	5
March ...	75·2	58·8	0·53	8
April ...	68·5	57·1	2·10	15
May ...	71·3	57·2	1·23	12
June ...	71·1	56·1	0·91	10
July ...	66·6	55·3	1·71	22
August ...	67·6	55·3	1·95	22
September	68·8	55·8	1·20	16
October ...	77·1	55·3	0·24	3
November	—	No Records		—
December	—	No Records		—
Mean for Year ...	71·7	56·7	Totals 10·83	118

Comparative Rainfall Statement, showing the Monthly Rainfall for the Year 1926, of Fifty-four Localities of the Uganda Protectorate.

MONTH	Arua.		Bikira.		Bubulu.		Budo.		Bukalasa.		Bunyaruguru.		Butiaba.		Butiti.		Bugondo.		Buunga.		Bwavu.		Dwoli.		Entebbe.		Fort Portal.	
	In.	No. of days.	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY	·04	2	No records		1·90	4	1·92	4	1·03	5	No records		0·09	1	No records		2·35	3	...	...	4·88	11	0·46	5	5·20	13	0·57	4
FEBRUARY	2·68	5	...	...	1·30	9	4·68	11	2·49	8	....	....	3·70	3	2·29	7	1·40	3	...	...	4·26	9	4·09	15	6·65	12	2·48	7
MARCH	2·08	8	...	...	1·96	12	2·80	12	4·02	15	....	....	0·62	3	5·15	11	2·49	6	...	...	5·50	19	1·98	11	6·89	23	3·17	8
APRIL	5·05	9	9·04	13	4·36	20	7·92	21	8·64	16	....	....	4·65	6	6·50	11	8·42	13	...	...	11·96	23	10·42	17	17·45	25	9·52	14
MAY	5·91	8	4·90	16	3·54	19	No records		3·20	13	....	....	3·80	5	6·72	9	6·35	11	8·23	19	5·47	18	9·27	19	6·62	29	3·44	9
JUNE	4·64	9	0·74	3	1·32	7	0·85	5	8·74	18	....	....	0·95	2	2·59	4	3·14	9	1·47	6	2·64	13	5·70	8	4·46	18	3·19	7
JULY	6·17	10	1·02	2	2·49	18	2·88	7	4·56	18	....	....	5·39	7	2·71	7	4·40	5	1·97	8	3·75	19	4·36	15	6·75	10	4·50	8
AUGUST	5·86	10	1·43	4	1·83	16	0·83	7	1·46	16	8·71	12	2·03	4	2·50	6	3·72	10	0·76	3	2·08	13	6·35	10	3·86	9	3·79	11
SEPTEMBER	4·74	10	6·01	15	2·04	17	6·25	15	7·23	20	6·80	14	4·94	10	6·78	9	9·55	7	4·40	13	6·64	22	6·81	18	3·80	12	5·92	12
OCTOBER	7·73	10	3·16	10	1·85	15	4·62	10	9·52	19	8·34	18	3·06	3	9·24	10	4·04	6	3·90	9	9·71	21	9·02	17	7·25	15	14·59	17
NOVEMBER	5·49	9	8·48	16	1·42	9	4·58	8	5·62	20	2·73	10	2·58	5	10·76	14	6·68	14	5·66	15	8·00	14	6·02	17	4·64	14	6·23	13
DECEMBER	Nil	...	0·92	3	0·68	3	Nil	...	1·27	2	0·83	2	0·42	1	2·56	4	Nil	...	1·55	11	2·06	9	1·65	3	1·62	6	0·70	3
TOTAL	50·39	90	36·30	82	24·69	149	37·32	100	57·78	177	27·41	56	32·23	50	57·80	94	52·54	87	27·94	84	66·95	188	66·13	155	75·28	176	58·10	113

MONTH	Gayaza.		Gulu.		Hoima.		Jinja.		Kabale.		Kalangala.		Kakumiro.		Kamuli.		Kampala.		Katigondo.		Kewezike.		Kisubi.		Kitamiro.		Kitgum.	
	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY	No records		Nil	...	0·34	3	1·03	8	2·57	3	7·67	12	0·92	3	....	....	1·45	9	6·00	8	1·10	4	3·47	7	No records		0·30	3
FEBRUARY	5·56	15	2·19	9	4·17	10	6·42	11	0·90	2	8·99	12	1·68	10	....	....	4·04	14	4·04	9	9·15	8	10·86	11	....	....	1·33	7
MARCH	5·76	21	3·60	10	4·66	11	5·52	17	5·42	15	12·71	18	5·21	15	....	....	6·56	30	9·14	17	6·29	15	4·94	18	4·59	10	2·08	11
APRIL	13·94	23	6·18	15	4·63	8	10·16	19	4·00	5	16·48	22	7·73	19	....	....	14.90	27	8·90	19	11·15	16	14·88	23	13·44	21	6·83	16
MAY	2·56	16	8·11	13	9·49	8	4·41	20	2·30	5	9·08	10	6·11	14	5·73	21	4·59	23	5·32	15	4·40	12	5·76	11	10·43	14	4·30	13
JUNE	1·44	12	7·15	13	2·36	7	1·87	10	0·15	2	7·38	8	3·30	7	4·63	16	1·29	16	1·08	3	1·01	5	3·48	11	4·42	11	5·97	19
JULY	5·95	18	8·90	13	6·46	9	0·88	7	1·83	4	1·43	3	1·12	10	5·28	12	5·82	20	0·96	3	1·78	6	3·48	8	1·75	5	7·81	13
AUGUST	3·29	14	10·21	14	8·16	11	3·84	9	1·27	4	2·44	6	6·65	15	2·79	13	3·10	21	3·34	4	2·10	4	1·38	6	No records		12·52	17
SEPTEMBER	10·40	21	6·44	13	9·29	13	5·81	18	3·45	15	3·80	12	6·80	17	8·95	16	3·05	20	4·35	12	4·90	11	1·34	3	2·05	8	8·41	8
OCTOBER	5·95	15	6·48	15	9·02	12	4·52	14	4·69	11	2·78	13	5·71	21	4·90	16	5·25	24	3·12	8	9·91	13	5·17	9	No records		7·13	12
NOVEMBER	7·17	21	4·37	13	8·65	19	5·96	18	4·41	15	7·18	13	9·85	22	5·10	16	7·47	16	6·52	13	7·43	14	6·90	13	...	...	3·80	6
DECEMBER	2·70	10	0·26	2	1·34	4	1·20	2	0·60	6	5·31	16	0·76	6	1·52	2	2·10	9	1·63	4	2·11	6	1·80	7	...	...	0·14	1
TOTAL	64·22	186	63·35	130	68·75	115	50·99	153	31·59	87	85·25	145	55·84	159	38·90	112	58·72	229	54·40	115	55·97	114	63·82	127	36·68	69	59·90	126

COMPARATIVE RAINFALL STATEMENT, SHOWING THE MONTHLY RAINFALL FOR THE YEAR 1926, OF FIFTY-FOUR LOCALITIES OF THE UGANDA PROTECTORATE—*continued.*

MONTH	Kivuvu.		Kilclooney.		Lalli Port.		Lira.		Magigye.		Masaka.		Masindi.		Masindi Port.		Mbale.		Mbarara.		Moroto.		Mubende.		Mulago.	
	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY ...	2·11	4	1·49	7	1·57	6	3·06	5	1·44	7	4·37	8	0·58	2	0·15	2	1·74	3	2·50	8	No records		0·45	4	...	...
FEBRUARY ...	4·93	10	3·59	14	3·87	7	Nil	...	3·79	11	4·34	10	2·42	6	2·80	8	3·55	12	2·44	7	2·02	4	3·30	10	...	...
MARCH ...	7·53	17	3·55	20	1·99	7	1·40	5	7·26	20	7·29	18	1·34	9	3·45	7	2·36	11	6·27	15	1·04	5	5·05	15	...	...
APRIL ...	11·49	17	12·15	21	12·70	21	8·95	16	14·01	17	10·98	19	4·68	10	5·84	12	6·86	14	5·92	12	7·69	15	5·21	17	...	...
MAY ...	3·92	15	6·24	17	8·25	16	3·03	5	2·82	9	4·92	17	3·74	12	3·62	8	6·05	15	4·67	13	13·70	8	4·55	10	...	...
JUNE ...	3·06	11	1·87	10	5·18	14	...	...	3·78	14	1·06	3	2·53	7	2·38	6	4·04	11	0·73	4	0·66	2	2·46	5	...	...
JULY ...	5·69	14	2·25	11	5·66	11	...	...	3·67	11	4·24	8	6·08	9	3·22	5	6·59	13	2·94	9	8·10	11	2·54	6	...	...
AUGUST ...	1·43	4	2·09	14	6·74	13	...	...	1·95	7	0·65	4	4·61	9	1·25	4	3·53	8	0·72	4	0·66	4	5·81	14	...	...
SEPTEMBER ...	5·45	13	7·92	18	5·10	12	...	...	5·58	13	5·16	13	5·65	17	6·39	9	5·85	14	9·57	15	8·13	11	3·98	14	3·23	19
OCTOBER ...	6·25	12	15·35	28	1·58	6	...	...	6·08	8	5·09	9	3·30	14	0·60	3	3·56	10	4·08	9	3·90	3	7·90	14	5·78	23
NOVEMBER ...	5·50	12	6·80	22	4·92	7	...	...	5·53	14	6·83	11	4·94	17	2·45	6	2·67	16	8·40	8	2·95	6	6·83	18	7·39	16
DECEMBER ...	1·03	4	1·75	8	Nil	...	...	...	1·93	3	0·76	5	0·16	2	Nil	...	1·69	4	1·70	4	Nil	...	0.63	5	1·81	9
TOTAL ...	58·39	133	65·03	190	57·96	120	16.44	31	57·84	134	55·69	125	40·03	114	32·25	70	48·49	131	49·94	108	48·85	69	48·71	132	18·21	67

MONTH	Mulange.		Mutai.		Nagichot.		Nagoje.		Namasagali.		Namukekera.		Nandere.		Ngetta.		Ngora.		Nyondo.		Rubaga.		Serere.		Simsa.	
	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY ...	2·47	4	1·64	2	0·40	5	1·30	3	0·87	1	1·34	8	No records		...	...	No records		1·24	6	1·96	6	2·91	5	1·73	8
FEBRUARY ...	1·21	2	2·69	4	0·56	5	4·07	9	1·59	5	3·68	15	...	...	2·86	7	2·24	7	2·90	4	No records		2·59	7	3·98	4
MARCH ...	5·79	8	5·18	11	0·53	8	5·73	16	5·79	7	5·72	17	...	...	2·07	11	5·85	7	6·44	11	4·50	13	3·96	15	3·78	9
APRIL ...	9·74	13	8·48	14	2·10	15	8·08	15	10·40	18	10·59	23	13·95	12	7·96	20	6·82	11	9·75	20	14·05	20	13·29	22	9·85	18
MAY ...	9·21	11	4·65	10	1·23	12	4·30	8	7·19	12	3·93	17	5·09	8	10·35	18	11·21	6	11·80	19	3·67	11	4·35	17	6·48	15
JUNE ...	5·34	5	1·72	4	0·91	10	3·86	11	4·31	8	4·88	14	5·70	12	6·14	19	5·01	15	2·67	9	3·05	8	4·66	12	4·89	13
JULY ...	3·39	4	2·76	5	1·71	22	2·98	8	2·34	8	1·50	10	4·50	8	6·44	22	10·48	13	11·34	16	5·83	5	3·90	17	7·16	12
AUGUST ...	1·82	3	2·78	4	1·95	22	1·99	6	3·86	8	1·79	8	1·60	9	9·63	20	2·53	6	5·12	10	4·86	8	8·10	18	7·31	18
SEPTEMBER ...	8·34	10	5·58	10	1·20	16	5·98	12	5·93	14	7·48	15	2·19	12	10·84	20	7·85	13	4·68	14	4·36	9	8·92	15	10·68	15
OCTOBER ...	9·39	7	7·06	10	0·24	3	7·22	11	6·08	12	8·79	17	4·95	11	2·96	13	4·26	9	2·70	10	4·14	8	7·22	13	2·60	8
NOVEMBER ...	5·94	10	4·42	7	No records		8·12	10	6·36	15	4·85	17	3·90	11	4·20	21	4·74	13	3·02	13	8·49	8	9·61	16	8·03	12
DECEMBER ...	4·15	5	0·80	1	...	...	2·61	5	Nil	...	0·87	4	3·13	7	Nil	...	Nil	...	1·45	6	3·38	8	Nil	...	Nil	...
TOTAL ...	66·79	82	47·76	82	10·83	118	56·24	114	54·69	108	55·43	165	45·01	90	63·45	171	60·99	100	63·11	138	58·29	104	69·51	157	66·49	132

Appendix No. 9—*continued.*

Statement showing Situations and Latitudes, Longitudes and Heights of the Meteorological Stations of the Uganda Protectorate.

Station.	*Province.*	*Latitude.*	*Longitude.*	*Approximate Height above Mean Sea Level in feet.*
*Arua	Northern	3°01′ N.	30°55′ E.	4200
Bikira	Buganda	0°36′ 30″ S.	31°34′ E.	4000
Budo	,,	0°16′ N.	32°29′ E.	4300
Bugondo	Eastern	1°37′ N.	33°17′ E.	3500
*Bukalasa	Buganda	0°43′ N.	32°30′ E.	3700
Bubulu	Eastern	0°57′ N.	34°16′ E.	4200
Butiaba	Northern	1°50′ N.	31°20′ E.	2000
Butiti	Western	0°39′ N.	30°32′ E.	4700
Buunga	Buganda	0°23′ 30″ S.	31°47′ E.	4100
Bwavu	,,	0°21′ N.	33° 1′ E.	4270
*Entebbe	,,	0°3′ 35″ N.	32°28′ 30″ E.	3850
*Fort Portal	Western	0°40′ N.	30°17′ E.	5300
Gayaza	Buganda	0°27′ 30″ N.	32°36′ 30″ E.	3950
*Gulu	Northern	2°45′ N.	32°20′ E.	3700
Hoima	,,	1°26′ N.	31°22′ E.	3800
*Dwoli	,,	1°30′ N.	31°21′ E.	4000
*Jinja	Eastern	0°26′ N.	33°12′ E.	3880
Kabale	Western	1°15′ S.	29°59′ E.	6000
Kakumiro	Buganda	0°46′ N.	31°19′ E.	4500
*Kampala	,,	0°19′ N.	32°35′ E.	3300
*Kamuli	Eastern	0°57′ N.	33°07′ E.	3650
Katigondo	,,	0°13′ S.	31°44′ E.	4300
Kewezike	,,	0°11′ N.	32°5′ E.	4000
Kisubi	,,	0° 7′ N.	32°32′ E.	3850
Kitamiro (Buvuma Is.)	Buganda	0°12′N.	33°17′ E.	3800—4000
*Kitgum	Northern	3°20′ N.	32°53′ E.	3000
Kivuvu	Buganda	0°23′ N.	32°47′ E.	3700
Kilclooney	Western	0°30′ N.	30°18′ E.	5200
Lale	Eastern	1°42′ N.	33°28′ E.	3400
Lira	,,	2°15′ N.	32°55′ E.	3700
Magigye	Buganda	0°29′ N.	32°36′ E.	—
*Masaka	,,	0°20′ S.	31°44′ E.	4200
*Masindi	Northern	1°41′ N.	31°43′ E.	3750
Masindi Port	,,	1°42′ N.	32° 5′ E.	3360
*Mbale	Eastern	1° 6′ N.	34°11′ E.	4000
*Mbarara	Western	0°37′ S.	30°39′ E.	4800
Moroto	Eastern	2°34 N.	34°42′ E.	5000
*Mubende	Buganda	0°35′ N.	31°22′ E.	5120
Mulago	,,	0°20′ 30″ N.	32°24′ 45″ E.	4150
Mulange	,,	0°31′ N.	33° 3′ E.	4250
Mutai	Eastern	0°34′ N.	33°14′ E.	3600
*Nagichot	Mongalla, Soudan	4°20′ N.	33°29′ E.	6670
Nagoje	Buganda	0°27′ N.	32°53′ E.	3780
Namasagali	Eastern	1° 0′ N.	32°57′ E.	3400
Namukekera	Buganda	0°41′ N.	32°14′ E.	3700
Nandere	,,	0°37′ N.	32°20′ E.	3900
*Ngetta	Eastern	2°17′ N.	32°56′ E.	—
Ngora	,,	1°27′ N.	33°46′ E.	3700
Nyondo	,,	1° 1′ N.	34°14′ E.	4500
Rubaga	Buganda	0°18′ N.	32°33′ E.	4130
*Serere	Eastern	1°31′ N.	33°27′ E.	3600
*Simsa (Soroti)	,,	1°44′ N.	33°35′ E.	3600
Kalangala	Buganda	0°20′ S.	32°19′ E.	3800

*Represents Meteorological Stations, all others being Rainfall Stations.

List of Circulars obtainable from the Director of Agriculture, Kampala.

No. 2.—Cotton Cultivation.

No. 3.—Diseases of *Hevea brasiliensis* in Uganda.

No. 4.—Die-back of *Coffea arabica* in Uganda.

No. 5.—Sugar Cane Experiments.

No. 7.—Report on Coffee Cultivation in Uganda.

No. 8.—Diseases of Cereals in Uganda.

No. 9.—Diseases of *Coffea arabica* in Uganda.

No. 12.—Sugar in Uganda.

No. 13.—Coffee Bug (*Antestia lineaticollis*, Stal., var.).

No. 14.—*Coffea robusta* in Uganda.

No. 15.—Cultivation and Preparation of *Coffea robusta*.

No. 16.—Cotton Experiments 1925-26.

No. 17.—(*A*) The Occurrence of Angular Leaf-spot of Cotton in Uganda.

(*B*) Rot of *Hevea Cortex* in Uganda.

No. 18.—Rubber Experiments.